



Bridging Troubled Water: Electoral Availability in European Party Systems in the Aftermath of the Great Recession (2009-2014)

An Application of Bayesian Ideal Point Estimation

Andrea De Angelis

Thesis submitted for assessment with a view to obtaining the degree of Doctor of Political and Social Sciences of the European University Institute

Florence, 21 June 2017

European University Institute
Department of Political and Social Sciences

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Abstract

How is electoral competition structured in Europe? This fundamental problem lies at the core of democracy, as popular sovereignty depends on the existence of a real policy choice, and requires the most preferred alternative being selected and implemented (Dahl 1956). However, there is no consensus yet regarding the actual occurrence of this mechanism of responsive electoral competition (Schumpeter 1942). I develop a new empirical design to test whether a structure of electoral competition in Europe actually exists, based on the idea that greater party system polarization should be associated with a smaller propensity for voters to switch between electoral blocks. To do so, I identify two potential *loci* of electoral competition in Europe: the left-right dimension (Downs 1957; Bartolini and Mair 1990), and the more recently introduced integration-demarcation cleavage (Kriesi 1998; Kriesi et al. 2006). Data from the European Election Survey (2009, 2014) allow the implementation of the novel design in order to study electoral competition in 27 EU member states.

For this thesis to empirically address the question of electoral competition in Europe a preliminary, methodological development has to be made. Indices of political polarization are generally produced using survey respondents' average perceptions of party positions. I show that this approach leads to systematic measurement error: the problem, known as Differential Item Functioning (DIF), depends on the fact that voter perceptions are subjective and cannot be directly compared, neither within nor between countries. To separate the actual polarization from perceptual bias, I develop a two-stage Bayesian Aldrich-McKelvey (2S-BAM) scaling procedure and apply Dalton's index on DIF-corrected measures of party positions (ideal points) on both dimensions. Results show that when standard DIF-inflated polarization indices are used, left-right ideology seems to be still structuring European electoral competition. However, once the indices are optimized, using party ideal points, the integration-demarcation cleavage gains the upper hand over the left-right dimension in structuring electoral competition in contemporary Europe. Thus, this thesis makes both a methodological and theoretical, as well as an empirical contribution to the literature in this field.

Table of Content

Chapter 1 — Substance and method: introducing the main themes	1
1.1 The two main themes of the thesis	1
1.2 Do Italian and British voters misperceive party positions?	6
1.3 A preliminary example of interpersonal incomparability: measuring air temperature	9
1.4 Why is this at all important? How measurement error contributed to disagreement between the ‘populist’ and the ‘realist’ views of democracy	11
1.5 A roadmap to the thesis	18
Chapter 2 — Nothing but perception? The theoretical linkages between subjectivity, polarization and electoral competition	22
2.1 Subjectivity and complex concepts: not everything that counts has been counted	22
2.2 Cognitive bias in voter perception: explaining idiosyncratic errors	30
2.2.1 Misplaced locations: where the others are depends on where you are	31
2.2.2 Stretched perceptions: information as ability to differentiate	34
2.2.3 Errors-in-variables: the link between scale distortions and polarization	40
2.3 Misunderstanding electoral competition: the confounding effect of measurement error in polarization	42
2.3.1 Physiology and pathology of European electoral competition	43
2.3.2 Goodbye Lenin? An empirical model of electoral competition	51
2.4 The confounding effect of perceptual biases on electoral competition	60
Chapter 3 — Ideology, polarization, and the problem of latent dimensions	61
3.1 Introduction	61
3.2 Four elements for a conceptual definition of polarization	63
3.2.1 One concept, three measurement approaches	68
3.2.2 Measures of party-system polarization	71
3.3 A continuum, a plan, or a hyperplane? A deductive interpretation of dimensionality in the political space	73
3.3.1 Two perspectives on dimensionality	74
3.3.2 Latent dimensions and the concern of high-dimensionality	75
3.3.3 Left-right positions, policy issues, and party images	78
3.3.4 Left-right as a unidimensional representation of the European political space	80
3.3.5 Contesting Europe? The logical unfolding of a second dimension	83
3.4 The incomparability of latent positions as a problem of omitted variables	86
3.5 The voter is an apple, the party is an orange	89
3.6 But there are apples and apples: the problem of subjectivity in voter perceptions	90
3.7 The problem of cross-country incomparability and the main solutions	92
Chapter 4 — Latent ideologies: a Bayesian Aldrich-McKelvey algorithm to compare voters and parties in the European Common Space	96
4.1 Introduction	96
4.2 The Aldrich-McKelvey scaling algorithm	97

4.3	Retrieving a European Common Space: the two-stage Bayesian Aldrich-McKelvey procedure	102
4.3.1	Recreating country-specific basic spaces to achieve DIF-corrected party positions	103
4.3.2	The European Common Space: bridging party systems	110
4.4	Mapping the second dimension: the assumption of separability	114
4.5	Relationships with other statistical models and the mathematical roots of the Aldrich-McKelvey algorithm	115
4.6	The advantages of the Bayesian approach to latent variable modelling	119
Chapter 5 — The two-stage Bayesian Aldrich-McKelvey procedure in practice: data, convergence, validation and descriptive statistics		123
5.1	Data	123
5.1.1	European Election Survey data	123
5.1.2	EES 2014 accident	126
5.1.3	Additional data sources	128
5.2	Estimation and MCMC specification	130
5.3	Getting a sense of the whole process: visualization of posterior distributions, chain convergence, Highest Density Intervals and central tendency	133
5.4	A more applied look at voters' ideal points	143
5.5	The initial puzzle solved: political parties' ideal locations in the basic space	150
5.5.1	Italian party positions: correcting DIF-inflated raw left-right placements with ideal points' estimation	150
5.5.2	Ideal points of British parties: retrieving comparable party positions with highly DIF-distorted perceptions	153
5.6	Descriptive statistics and plots	156
5.6.1	Voters' distortion parameters	156
5.6.2	Voters' ideal points	161
5.6.3	Political parties' ideal points	164
5.6.4	Country-specific distortion parameters	168
5.6.5	Ideal points of the European Parliament's political groups	172
5.7	Validating the new measures	174
5.7.1	Comparing rank-order correlations	177
5.7.2	Comparing Root-Mean-Square Errors (RMSE)	179
5.7.3	Validating country-level DIF distortions	185
5.7.4	A predictive validity test of voters' and parties' ideal points with propensities to vote	187
5.8	Concluding remarks	197
Chapter 6 — Discerning the Zeitgeist: empirical analyses and findings		200
6.1	Introduction	200
6.2	Empirical hypotheses and operationalization of the main variables	202
6.2.1	Data and modelling strategy	206
6.2.2	Presentation of empirical results	207
6.2.3	Control variables	208
6.2.4	Voters' ideology and EU position	210
6.2.5	Electoral availability	211
6.2.6	Party system polarization	214
6.3	Explaining latent lateral shift distortions (H1–H4)	219
6.4	Explaining latent stretch distortions (H5–H8)	228
6.5	What do standard polarization indices really measure? (H9–H10)	232

6.6	The structure of European electoral competition (H11–H13)	234
Chapter 7 — A spectre is haunting Europe		252
7.1	A short summary of the main findings	252
7.2	What can we infer on national representation from EP data?	254
7.3	The forking path of measurement	256
7.4	A post-liberal democracy arising from the reaction of the nations	258
7.5	What is right? Acknowledging limits and assumptions	263
7.6	What is left? Perspectives, extensions and potential applications	265
7.7	Federalists of Europe, unite!	267
References		271
Appendix A The Bayesian AM scaling JAGS code script		A.1
Appendix B The Bayesian AM scaling JAGS code script		B.1
Appendix C Regression tables for predictive validity models		C.1
Appendix D Description of the main variables of interest		D.1
Appendix E Descriptive plots for voters' between-block electoral availability (left-right)		E.1
Appendix F Descriptive plots for voters' between-block electoral availability (mainstream/anti-establishment)		F.1
Appendix G Regression table for voters' lateral shifts distortions (H1-H4)		G.1
Appendix H Regression table for voters' scale distortions (H5-H8)		H.1
Appendix I Polarization and scale distortions (H9-H10) — Left-right		I.1
Appendix J Detecting the structure of electoral competition (left-right dimension, H12)		J.1
Appendix K Detecting the structure of electoral competition (mainstream-challenger dimension, H13)		K.1
Appendix L The two-stage Bayesian Aldrich-McKelvey model		L.1

List of Figures

Figure 1.1 — Example of violation of direct comparability of responses.....	4
Figure 5.1 — Posterior distribution of parameter a1 (voter 1, France).....	138
Figure 5.2 — Posterior distribution of parameter b1 (voter 1, France).....	140
Figure 5.3 — Posterior distribution of the National Front party ideal point (France, 2009).....	143
Figure 5.4 — Empirical distribution of simulated ideal points (EES 2009, France – voter 1).....	145
Figure 5.5 — Empirical distribution of simulated ideal points (EES 2009, four French voters).....	146
Figure 5.6 — Ideal points of Italian political parties (posterior densities).....	152
Figure 5.7 — Ideal points of U.K. political parties (posterior densities).....	154
Figure 5.8 — Distributions of voters' left-right shift distortions.....	157
Figure 5.9 — Distributions of voters' left-right stretch distortions.....	159
Figure 5.10 — Distribution of voters' EU distortions (2009).....	160
Figure 5.11 — Voters' ideal points on the left-right dimension (EES 2009).....	162
Figure 5.12 — Voters ideal points on the EU integration dimension (EES 2009).....	162
Figure 5.13 — Voters' ideal points on the left-right dimension (EES 2014).....	163
Figure 5.14 — Left-right party positions in 2009 measured by ideal points, CMP, EM, and CHES scores	165
Figure 5.15 — Party positions measured with raw average placements and 2S-BAM ideal points.....	168
Figure 5.16 — Coefficient plots for centre-left vote preferences' predictors.....	191
Figure 5.17 — Coefficient plots for centre-right vote preferences' predictors.....	193
Figure 5.18 — Coefficient plots for far-left vote preferences' predictors.....	194
Figure 5.19 — Coefficient plots for far-right vote preferences' predictors.....	197
Figure 6.1 — Measures of left-right party system polarization.....	218
Figure 6.2 — Measures of party system polarization of European integration positions.....	218
Figure 6.3 — Coefficients' plot for latent lateral distortions (H1-H2).....	221
Figure 6.4 — Coefficients' plot for latent lateral distortions (H3).....	223
Figure 6.5 — Coefficients' plot for latent lateral distortions (H4).....	225
Figure 6.6 — Coefficients' plot for latent scale distortions (H5-H8).....	229
Figure 6.7 — Potential scale reduction factors for Model 19.....	238
Figure 6.8 — Posterior predictive distribution of dependent variables.....	239

List of Figures in Appendices

Figure E.1 — Left-right between-block availability (country averages, EES2009)	E.1
Figure E.2 — Left-right between-block availability (country averages, EES2014)	E.2
Figure E.3 — Change in left-right average availability (2009-2014)	E.3
Figure F.1 — Mainstream/anti-establishment between-block availability (country averages, EES2009)	F.1
Figure F.2 — Mainstream/anti-establishment between-block availability (country averages, EES2014)	F.2
Figure F.3 — Change in mainstream/anti-establishment between-block availability (2009-2014)	F.3

List of Tables

Table 1.1 Italian voters' average perceived left-right position of political parties	7
Table 1.2 British voters' average perceived left-right position of political parties	7
Table 5.1 — Summary of self-placement, ideal points and party placements for voters 2, 4, 6 and 8 (EES 2009, France).....	147
Table 5.2 – Country-specific DIF distortion parameters	170
Table 5.3 — Left-right and EU integration ideal points for European Parliament's political groups, EP 2009 elections.....	172
Table 5.4 — Left-right and EU integration ideal points for European Parliament's political groups, EP 2014 elections.....	173
Table 5.5 — Spearman rank-order correlation coefficients of standard and ideal points' measures of party positions	178
Table 5.6 — Root-Mean-Squared Errors of standard averages and ideal points' measures of party positions by country, EES 2009	180
Table 5.7 — Root-Mean-Squared Errors of standard averages and ideal points' measures of party positions by country, EES 2014	180
Table 5.8 — Spearman correlation and RMSE with DIF-corrected CHES scores as benchmark	187
Table 6.1 — Summary table of empirical hypotheses.....	203
Table 6.2 — Polarization and scale distortions (H9–H10).....	233
Table 6.3 — Detail of aggregate-level coefficients from Appendix J (left-right)	242
Table 6.4 — Detail of aggregate-level coefficients from Appendix K (EU integration)	245
Table 6.5 — Robustness test: different threshold for electoral availability (LR).....	247
Table 6.6 — Robustness test: different threshold for electoral availability (MC).....	247
Table 6.7 — Robustness test: different polarization measure (LR).....	248
Table 6.8 — Robustness test: different polarization measure (MC)	249
Table 6.9 — Robustness test: ML estimation (LR)	250
Table 6.10 — Robustness test: ML estimation (MC).....	251

List of Tables in Appendices

Table C.1 – Predictive validity: effects of ideological distance on PTVs for centre-left parties	C.1
Table C.2 — Predictive validity: effects of ideological distance on PTVs for centre-right parties	C.5
Table C.3 — Predictive validity: effects of ideological distance on PTVs for far-left parties.....	C.9
Table C.4— Predictive validity: effects of ideological distance on PTVs for far-right parties.....	C.13
Table D.1 — Descriptive statistics of main variables of interest	D.1
Table G.1 — Regression table for voters' lateral shift distortions	G.1
Table H.1 — Regression table for voters' scale distortions	H.1
Table I.1 — Regression table of voters' scale distortions as a function of polarization indices (left-right)	I.1
Table I.2 — Regression table of voters' scale distortions as a function of polarization indices (EU integration, 2009 only).....	I.5
Table J.1 — Bayesian Hierarchical Logit model of left-right between-group electoral availability on left-right polarization indices.....	J.1
Table K.1 — Bayesian Hierarchical Logit model of electoral availability on EU integration polarization indices	K.1

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* * * * *

The Florence charterhouse is a Carthusian monastery situated on the hillside overlooking Florence, in the area of Galluzzo. The motto of the Carthusian monks recites: *Stat crux dum volvitur orbis*, “the cross is steady while the world is turning”. The Carthusian monks come from all over the world, they own hardly anything, and live their life as hermits in the complete solitude and silence of their cells during the day, when they dedicate their time to prayers, to the study of the holy books, and to the writing of spiritual works, only sometimes interrupted by light physical exercise, usually practiced in the form of growing flowers. At night, the Carthusians do not sleep, but leave their cells and meet all

their brothers in the chapel, to experience intense hours of communion where they chant all together, until the daylight, as a real spiritual community.

The European University Institute is also situated on the hillside overlooking Florence, in the area of Fiesole, in *villas* that are steady while the world is turning. EUI students come from all over Europe and beyond, they own hardly anything, and spend their days in library cells, in almost complete solitude, dedicating their time to the study of seminal books, and to the writing of scientific work, only sometimes interrupted by light physical exercise, usually practiced in the form of a football game. At night, the EUI students do not sleep, but leave their library cells to meet all their brothers and sisters at Bar Fiasco, to experience intense hours of communion where they chant all together, until the daylight, as a real human community.

* * * * *

Concluding these acknowledgements, I want to express all the grace and joy that I feel having shared this experience with such a special community, to which I owe countless treasured memories. My eternal gratitude goes to my (not statistically) significant other Signorina M. ;) who always stood by my side in these years. Father Diego D19 Spettacolo Puro Garzia and brothers (Neil) Jan Karremans and Alberto Il Pazzo (it means 'the crazy guy'). The dear, patient and caring (land)Lady Machteld. The whole legendary big family of the IUE Calcio Squadra Fantastica and especially my 'goalkeeping supervisor' Cosimo. Elie Michel, my dear friend and only companion in upper cloister's long nights. Last man standing Lore the great Cicchi. Bomber Chiara and Bomber Schebesta. All the brothers and sisters from my vibrant SPS cohort. The most distinguished members of the EUI old guard 'I am a lawyer' Marco Rizzi, Matteo Albanese il Carbonaro and —most importantly— their gentle ladies. All the tumultuous and thundering Montecarla Legends' Coppa Pavone team that only armed with systematic untraining, planned unplanning, and epidemic headache, heroically attempted to get the Coppa back from the economists and failed. Twice. Presi and his wonderful family, Davide Morisi, Lorenzo De Sio, Diego Garzia (bis) and all the fans of Presi Goes to Seattle rock band. Those who are no longer here but still live in my heart. Those I forgot writing this quick page but still appear in my memories. Thank you.

Chapter 1 — Substance and method: introducing the main themes

[W]e meet in the midst of a nation brought to the verge of moral, political, and material ruin. Corruption dominates the ballot-box, the Legislatures, the Congress, and touches even the [judiciary]. The people are demoralized; most of the States have been compelled to isolate the voters at the polling places to prevent universal intimidation and bribery. The newspapers are largely subsidized or muzzled, public opinion silenced, business prostrated, homes covered with mortgages, labor impoverished, and the land concentrating in the hands of capitalists. The urban workmen are denied the right to organize for self-protection, imported pauperized labor beats down their wages, a hireling standing army, unrecognized by our laws, is established to shoot them down, and they are rapidly degenerating into European conditions. The fruits of the toil of millions are boldly stolen to build up colossal fortunes for a few, unprecedented in the history of mankind [...]. From the same prolific womb of governmental injustice we breed the two great classes—tramps and millionaires. [...] We have witnessed for more than a quarter of a century the struggles of the two great political parties for power and plunder, while grievous wrongs have been inflicted upon the suffering people.

The Omaha Platform,
Formative Convention of the Populist Party,
Omaha, Nebraska, 4 July 1892

1.1 The two main themes of the thesis

A spectre is haunting Europe — the spectre of populism. From all sides of the Western world the anti-establishment wave has spread and grown to the point that it could shake liberal democracies and halt the path of economic and institutional integration that started in the wake of World War II. In Europe, sixty years after the combination of nationalism, polarization and dysfunctional representation had led to a devastating authoritarian

outcome and to the most horrific war of humankind, the path towards a peaceful federal Union seems compromised, if not on the brink of disappearance.

Populism has been defined as: “an ideology that considers society to be ultimately separated into two homogeneous and antagonistic groups, ‘the pure people’ versus ‘the corrupt elite’, and which argues that politics should be an expression of the *volonté general* (general will) of the people.” (Mudde 2004). Over the past two decades populist anti-establishment movements have increasingly pointed the finger at the “corrupt elite” in Brussels, identified with establishment parties that support the project of European integration. A unitary European federation is apparently the only institution that would allow European countries to exploit the advantages of the status of superpower in a globalized world and, in fact, for a long time the quasi-consensus among European elites and citizens alike represented this consideration. However, since the Maastricht Treaty, this view has been slowly but relentlessly and increasingly contested.

This thesis presents two overarching arguments: the first is substantive, the second methodological. In the first place, it is claimed that the politicization of Europe (Hutter, Grande and Kriesi 2016), particularly in the form of polarization of political parties’ positions towards the EU integration project, has changed the structure of electoral competition in European party systems. The main line of confrontation in European politics is no longer identifiable with the traditional left-right class cleavage. Instead, evidence shows that the ideological divide has been replaced with a new conflict between the defenders of national sovereignty and the supporters of further supranational integration, being represented by voters and parties’ positions towards EU integration. To test this assertion empirically, I have systematically examined the relationship between the party-system polarization, measuring the differentiability of policy packages on the supply, and the voters’ between-block electoral availability, indicating the openness to competition on the demand-side of party systems. I use the theoretical framework developed in (Bartolini 2002; Bartolini and Mair 1990; Mair 1997) that considers a minimal level of electoral instability as a necessary condition for Downsian, responsive electoral competition (Bartolini 2002, p. 311).

Thus, the structure of electoral competition is detected by focusing on the relationship between polarization of the supply and availability of the demand with reference to two policy dimensions (left-right ideology and EU integration). The basic intuition can be

expressed as follows: to the extent to which one of these two underlying dimensions actually structures European electoral competition, we should observe a negative relationship between party-system polarization — on the supply side — and the voters' between-block availability on the demand side. This corresponds to the idea that more differentiated policy packages do not leave voters indifferent, but would rather reduce the propensity to switch electoral block, if that policy dimension is relevant (i.e. if it actively structures European electoral competition). Yet, such a test requires a valid measure of party-system polarization, as a measure of policy differentiation in European party systems.

This observation leads us to the second overarching thesis: I contend that standard measures of party positions based on voters' perceptual data — i.e. raw left-right average perception — and consequently of party-system polarization — i.e. the index developed by Dalton (2008) — are flawed by the subjectivity of voters' perceptions. This problem is well-understood in other social science disciplines, such as psychometrics and psychology, and is known as Differential Item Functioning (DIF). DIF distortions have been shown to bias perceptual measures of the most varied social phenomena, from the measure of job satisfaction (Kristensen and Johansson 2008), to reported HIV prevention behaviour (Gourlay et al. 2014), to HR performance ratings (Hoffman, Lance, Bynum and Gentry 2010). Solutions to amend individual measures from DIF have long been proposed and are well-understood. These include principal component analysis, scaling methods, latent variable models and methods to tie together (to 'bridge' or 'anchor') latent indicators for different actors and settings, such as anchoring vignettes and the use of bridging observations.

While DIF have been shown to potentially affect all issue scales, greater care should be used in the case of complicated concepts representing latent dimensions, such as left-right ideology. In these cases, respondents are more likely to assign different substantive meaning to the reference points of the scale — generally the two endpoints and the centre — due to the inherent complexity and to the multiple aspects subsumed in a latent dimension.

For instance (King *et al.* 2004) shows how to control for respondents' DIF in cross-country comparisons involving political efficacy. The authors compare raw perceptions of political efficacy in Mexico and China:

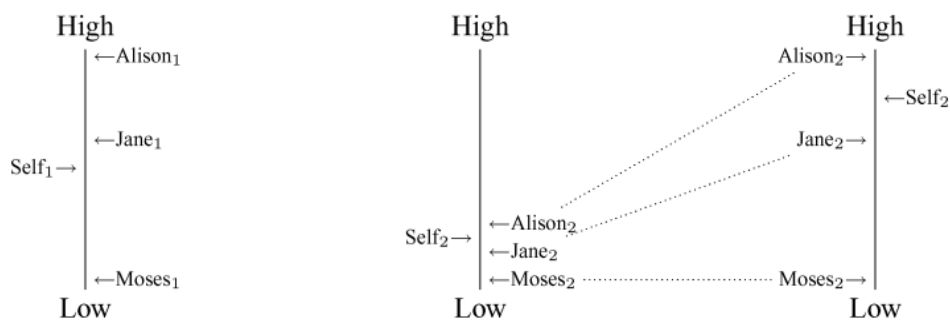
If we did not know these facts [that Mexico has free elections while China is an authoritarian regime], and instead used standard survey research techniques, we would

have been seriously misled. [...] Quite remarkably, [Figure 2] shows that the Mexicans think that they have less say in government than the Chinese think that they have. (King *et al.* 2004, p. 196)

The finding that Chinese respondents perceive greater political efficacy than their Mexican counterparts is at best counterintuitive. In fact, one immediately suspects that Chinese and Mexican respondents may perceive political efficacy's scales differently. Such a country-specific interpretation of the latent scale of political efficacy represents an instance of DIF. As the authors show, here the use of anchoring vignettes leads to the more reasonable finding that the actual level of political efficacy in China is very low, once we correct for this perception distortion. The misleading evidence that Chinese voters report greater levels of political efficacy than Mexicans, indicates the extent to which DIF distortions may weaken political analyses based on survey data.

Striking mistakes, such as the example of political efficacy above, are due to the violation of a strong assumption of *direct comparability* that empirical researchers routinely invoke in their studies. This can be appreciated inspecting the following Figure 1.1, reported from the (King *et al.* 2004) paper, providing a graphic representation of the levels of political efficacy for two hypothetical respondents (Self 1 and Self 2) and for three hypothetical items being evaluated (i.e. Alison, Jane and Moses).

Figure 1.1 Example of violation of direct comparability of responses¹



Note: Respondent 1, on the left, reported a higher self-assessment of political efficacy than respondent 2, in the middle. On the right, Respondent 2's reported scale is deformed into one comparable to 1's scale: Now 2's vignette assessments match those for Respondent 1, revealing that Respondent 2 has a higher actual level of political efficacy than Respondent 1.

¹ The figure is reported from (King *et al.* 2004, p. 195).

Figure 1.1 reveals how the perceptions of the three items (Alison, Jane and Moses) for Self₁ (first column) and Self₂ (second column) differ due to the different underlying value of the latent construct for the two respondents. Self₂ perceives the items similarly to a Mexican voter in the previous example: once the different interpretation is taken into account (column 3) it becomes clear that the level of political efficacy for Self₂ is larger and not smaller than for Self₁. The key point here is that the three items considered exist objectively. Thus, one can reasonably assume that their *actual* level of political efficacy should be the same. Then, by assuming the unique position of items, we can rescale the values of the latent construct as reported by survey respondents and restore their comparability.

There are two other aspects worth noting from the previous example. First, Self₂ reports a much lower level of political efficacy than Self₁. Second, the perceptions of the three items for Self₂ appear to have shifted and been compressed. Thus, the perceptions of political efficacy differ widely between the two respondents and we need to account for this subjective DIF distortion to realize that Self₂ has a higher level of *actual* political efficacy. As already noted, we can think of Self₂ as the Mexican respondent, and Self₁ as the Chinese respondent.

The example of political efficacy is only one instance of direct incomparability of survey measures and subjective DIF distortions can actually arise from factors other than cross-country cultural differences. Thus, the methodological insight in this thesis is that DIF distortions could potentially lead to erroneous conclusions regarding: 1) voters' self-reported policy positions; 2) political parties' *actual* policy positions; and 3) *actual* indices of party-system polarization.

In a nutshell, this thesis is also a comparative study of the positions of voters and political parties where I relax two strong assumptions routinely used in comparative research on political behaviour: on the one hand, the assumption of direct comparability between voter positions *within* countries; and on the other the assumption of direct comparability of parties *across* countries. Having clarified the main themes from a broader perspective, the next section explains why they represent key aspects in contemporary electoral behaviour.

1.2 Do Italian and British voters misperceive party positions?

The example involving political efficacy is a striking case showing how seriously DIF distortions may affect our inferences. Nevertheless, there is little evidence of the application of these techniques in comparative political behaviour,² and we may be led to think that DIF does not actually affect voters. Throughout the thesis, I show that this view is misleading and that the lack of studies explicitly examining direct incomparability of voter positions is a regrettable shortcoming in research. The reason is that voters' latent DIF distortions are better understood as systematic rather than random errors. Thus, this thesis is also a first attempt to systematically explain the latent distortions of European voters.

Thus far, we noted that respondents can differ in their interpretation of political scales, which can in turn make their reported values unreliable, unless we take into account that they ultimately represent subjective perceptions. This intuition of separating subjective interpretations from objective knowledge corresponds to a basic goal of the scientific method in the social sciences. All social science researchers would agree that individuals are unlike elementary particles. At the same time, most applied researchers still treat individuals *as if* they were just that. In this sense, the task of an applied physicist is simpler than the task of the applied social scientist: the physicist interacts directly with objective phenomena, whereas the objects studied by applied social scientists are part of *social reality*, which is neither necessarily nor entirely objective. Thus, in various instances, the social scientist has to rely on survey data or other forms of investigation that underlie the analysis of reported perceptions. In such cases, the failure to separate out the subjective and objective components of social reality may lead to potentially mixing two very different things.

Returning to the discussion on DIF distortion we may ask whether subjective perception distorts other measures beyond the previous case of political efficacy? A narrow set of applied studies actually shows that this is indeed the case (Aldrich and McKelvey 1977; Hare, Armstrong, Bakker, Carroll et al. 2015; Lo, Proksch and Gschwend 2014). In particular, it has been shown that voters interpret the left-right ideology scale, on which the spatial model of party competition is based, subjectively. To see how this can be bad, the reader can consider

² The only instance of a comparative model of voters, to the best of my knowledge, remains (Lo, Proksch, and Gschwend 2014).

the following simple tables (Table 1.1 and Table 1.2) reporting the raw average of voters' perceptions referring to political parties' stance on the classic left-right scale, as computed from the European Election Survey data for 2009 respectively in Italy and the United Kingdom.

Table 1.1 Italian voters' average perceived left-right position of political parties

	Average	Variance
La Destra	8.62	2.48
Il Popolo della Libertà	7.91	2.18
Lega Nord	7.58	2.60
Nuovo Centrodestra	4.87	1.79
Italia dei Valori	3.72	2.27
Partito Democratico	3.26	2.25
Sinistra Ecologia Libertà	1.47	2.11
Rifondazione Comunista	1.08	1.84

Source: 2009 European Election Survey.

Note: The entries represent respectively the raw average and variance of reported perceptions for each Italian political party. The left-right scale is measured with the standard item asking voters to place each party on a scale ranging from 0 (left) to 10 (right). All non-missing voters' perceptions were considered. Bold entries indicate cases of unreasonable rank-order.

Table 1.2 British voters' average perceived left-right position of political parties

	Average	Variance
Conservatives	6.53	2.59
British National Party (BNP)	5.51	4.28
UK Independence Party (UKIP)	5.43	2.95
Liberal Democrats	4.79	1.85
Labour	4.24	2.70
Green Party	3.97	2.22
Scottish National Party	3.75	2.56
Plaid Cymru	3.35	2.38

Source: 2009 European Election Survey.

Note: entries represent respectively the raw average and variance of the perception reported for each of British political parties. Left-right scale is measured with the standard item asking voters to place each party on a scale ranging from 0 (left) to 10 (right). All non-missing voters' perceptions have been considered. Bold entries indicate cases of unreasonable rank-order.

Table 1.1 and 1.2 reveal two specific problems. First, average perception provides an unreasonable rank order of party positions. The table referring to Italian parties suggests that Berlusconi's Popolo della Libertà (People of Freedom Party) — a large mainstream party with a considerable share of moderates — as standing to the right of the Lega Nord — a smaller populist, xenophobic and Eurosceptic party, although in the governing coalition with the Popolo della Libertà. The impression here is that Berlusconi's party is more extreme than it actually is and, at the same time, the Lega Nord appears to be more moderate than it is. This has the effect of flipping the rank order, which appears unreasonable. An expectation more in line with prior knowledge of the Italian party system would be that Berlusconi's party should either stand to the left of the Lega Nord, or that be located in about the same ideological area, given that both had been in the same political coalition and partners in government. Taking the British case (Table 1.2), the rank order of party positions appears unreasonable. The Conservative Party appears to be the most right-wing British party, standing to the right of UKIP (United Kingdom Independence Party) which, in turn, stands to the right of the far-right BNP (British National Party). As we will see, this is the kind of evidence that has often led researchers to conclude that voters possess insufficient information to indicate party positions accurately and thus to vote accordingly based on spatial considerations (Converse 1964).

Secondly, we note a difference in the way British voters use the left-right scale compared to Italian voters. British voters tend to compress party positions in a much narrower range, while Italian voters tend to spread political parties out, using the whole range of available values. Net of the unreasonable rank-order, one may think that the two far-right parties examined (the Italian 'La Destra' and the BNP) should be in about the same position on the ideological scale. Yet given the extent to which British voters tend to compress their reported perceptions this may not be observed.

The suspicion is that the perplexing rank-order of reported party positions may arise from DIF distortions and the mixing of subjective and objective components of social reality. We need to ask whether relaxing the assumption of direct comparability of perceived party positions — within and between countries — may help us to obtain a more accurate rank-order. Better rank-order, in turn, would also suggest that voters do have enough information to vote ideologically. This idea is one of the interrogative elements guiding this research.

The next section presents an initial description of the problem of scale distortion, considering the example of measuring air temperature without a thermometer.

1.3 A preliminary example of interpersonal incomparability: measuring air temperature

The problem of subjectivity of scales was identified in the empirical work on multidimensional scaling in psychometric research, especially involving the problem of estimating test-takers' intelligence and ability from a set of repeated tasks (or stimuli). The basic intuition of scale incomparability is that voters can interpret stimuli in different ways, even though the endpoints of the scales are nominally fixed, because they interpret that scale in a different way. For example, we can consider the hypothetical case of a fictitious research task such as measuring air temperature *without* a thermometer.

A political researcher would probably solve the problem by asking to a random sample of people on the street a question such as: "What temperature do you think it is today?" Then, the hypothetical researcher would probably use the average response to this question as a proxy for the air temperature. We can imagine the hypothetical interviewer walking around at random on a cold winter day, with a real (true but unobservable) temperature of -4° , and stopping to interview e.g. an Italian respondent. The interview can be described as a two-step process. First, the respondent forms a subjective perception and may communicate this perception as a mental consideration such as: "It's quite cold today". Second, the respondent will project the perception *in their own metric* and report the value to the interviewer. Let us assume the answer is. ' -2° '. At this point, the reader has noticed the complete absence of any scale indication. This reported value of -2° only makes sense if it is evaluated in terms of the measurement scale of the interviewee, e.g. according to the Celsius scale. If both the respondent and the interviewer are using the Celsius scale the measurement will not be systematically biased.

The key question to understand DIF and scale incomparability is: what would happen if the interviewer selects an American person instead? If the interviewer does not mention any indication of the scale being used in the second stage of the process of forming a response, an American respondent would report the perception in terms of the Fahrenheit scale, and the

answer in this case might be '28°', again, without any indication of the temperature scale. The respondent knows the scale, but does the interviewer? If the metric remains implicit, the interviewer may misinterpret '28°' as 28°C (degrees Celsius), rather than 28°F (degrees Fahrenheit).

The difference between the Celsius and the Fahrenheit scales is large enough for us to immediately spot a measurement error. These are formally defined scales and as such they apply identically for every individual using them. The Celsius and the Fahrenheit degrees are linked by a linear relationship: $C^{\circ} = \frac{F^{\circ}-32}{1.8}$, where -32 is a location parameter that shifts the origin of the temperature scale laterally (i.e. shifting the centre and the endpoints of the scale), and 1.8 is a scale parameter that changes the distance metric (i.e. the unit of measurement). If we are aware of the existence of the two scales, and if we are able to estimate the two linear distortion parameters, then we can directly compare the perceptions of the American and the Italian interviewed on the street, by *rescaling* the reported measures onto a common scale. For instance, in this case we may rescale the Italian respondent's perception as: $Y_i^* = (Y_i \cdot 1.8) + 32 = (-2^{\circ}C \cdot 1.8) + 32 = 28.4^{\circ}K$; where Y_i^* are the unobserved (Fahrenheit-converted) perceptions of Italian respondents, and Y_i is the observed perception in °C.

This fictitious research task represents the problems of applied political researchers using individual-level surveys. In fact, the ideology scale works in much the same way as the temperature scale although, unfortunately for the ideology scale no political science authority has yet assigned two political actors as endpoints of the scale, nor established that those actors should apply for all voters in a party system. This makes the ideology scale inherently subjective. Thus, in contrast to scales of temperature, latent scales cannot be exactly codified with anchoring points and distance metrics for all voters in a certain party system: individuals have their own subjective endpoints, resulting from their own socio-historical experience, political identity, beliefs and available information. Thus, for the measurement of ideology the parameters for location and stretch distortions are not only country-specific, but also individual-specific, as they can change from one voter to another. Thus, an appropriate model should allow us to: 1) let location and scale parameters vary across individuals; 2) measure those individual parameters building a common space; and 3)

correctly place all the ideal points in the same metric. As I will argue throughout the thesis, voters systematically shift and stretch the endpoints of the ideology scales. My thesis tries to explain these distortions systematically and to provide reasonable explanations. Moreover, due to the fact that misperceptions do not occur at random, I show how the incorporation of such scale distortions leads to a systematic bias in the measurement of party-system polarization. Finally, I present evidence showing that once polarization is measured correctly, a new dimension appears to structure European electoral competition.

1.4 Why is this at all important? How measurement error contributed to disagreement between the ‘populist’ and the ‘realist’ views of democracy

In this section I show how measurement errors in the form of perceptual and scale distortions can generate confusion around empirical findings, leading to inflated disagreement. I first discuss the growing contrast between two competing theories of democratic representation: the ‘populist’ (or ‘folk’) theory describing representative democracy as the process in which politically aware voters select the parties in government on the basis of their preferences, and guide a preference-induced policy-making process; and the ‘realist’ view of democracy, advancing the idea of a top-down preference-shaping process where voters’ behaviour is largely guided by social identities and partisan loyalties rather than by policy preferences. Then, I highlight how the disagreement over the extent of psychological mechanisms such as self-persuasion and projection can generate different accounts of the empirical findings. Finally, I argue that better measures and modelling approaches can mitigate such psychological biases. Then, I show how these endogenous mechanisms can be at least partly accounted for by the perceptual distortion parameters that the 2S-BAM model allows to estimate.

Robert Dahl once noted how “running through the whole history of democratic theories is the identification of ‘democracy’ with political equality, popular sovereignty, and rule by majorities” (Dahl 1956: 34). In particular, Dahl also indicates the fundamental condition for a popular control of the policy-making process: “The condition of popular sovereignty is satisfied if and only if it is the case that whenever policy choices are perceived to exist, the

alternative selected and enforced as governmental policy is the alternative most preferred by the members” (Dahl 1956: 37). This consideration leads Dahl to the following proposition: “The only rule compatible with decision-making in a populist democracy is the majority principle” (Dahl 1956: 37).

In this ‘populist’ account of democracy, political parties are placed at the centre of the representation process: they play the role of the transmission belt — the *linkage* — of the majority principle, connecting citizens’ preferences and policy outcomes; converting preferences into policies. Dalton, Farrell, and McAllister (2011) articulate the party government ‘chain’ into five linkages. In the *campaign* and in the *participatory* linkage, political parties enable the process of democratic selection by, respectively, recruiting the candidates for office and by mobilizing their constituencies to participate taking side in the electoral process. In the *ideological* linkage, parties are called to represent different policy options and to inform the voters regarding their positions, in order to allow the latter to base their voting decision on such anticipated policy positions. Next, in the *representative* linkage, political parties enable an effective transmission of the preferences expressed by the citizens into the democratic institutions. Finally, in the *policy* linkage parties implement their policy pledges, realizing the political change that had been initially demanded by the voters. Amid growing concerns pointing at a decline of political parties in established democracies Dalton, Farrell, and McAllister (2011) engage in a linkage-by-linkage validation of the representation process. Their compelling analytical effort leads to the following conclusion:

“This cumulative evidence thus suggests that voters choose parties in elections based on the broad political goals that they wish to see implemented. Voters sit through the information that is available to them, which, more often than not, is fragmentary and fleeting, and then make a choice. In turn, parties deliver on the wishes of their voters if they are elected to government.” (Farrell, and McAllister 2011, p. 218).

The party linkage model implies the responsive character of electoral competition: “From a normative point of view, the relationship between citizens’ interests and policy decisions of representatives should be a causal one. Responsiveness is one of the features democracy stands for.” (Wessels 2007, p. 834). This normative argument rests on a solid ground of empirical evidence, provided that a vast array of representation studies demonstrates voters’ general awareness of the ideological differences between parties, as well as the practical

importance of ideological differences for their voting decisions. Dalton (2015) studies aggregate voter-party congruence using the 2009 European Election Survey (EES) data on perceived left-right positions to conclude that, across European party systems, “The basic pattern is that like-minded voters and parties are able to connect, which is an essential aspect of democratic representation.” (Dalton 2015, p. 10). The study of the dynamic change of party positions (Adams *et al.* 2004, 2006) reveals that party positions’ shift similarly to the changes in the public opinion, particularly for mainstream (vote-seeking) parties and to a lesser extent for niche (policy-driven) parties. Furthermore, Ezrow *et al.* (2011) analyse the trends in policy positions for 15 Western European countries in the period 1973-2002 to find that niche parties are more responsive to the position of their own current supporters rather than to the general public. In a more recent analysis comparing EES data, manifesto data and experts’ perceptions of party positions, Adams *et al.* (2015) find that citizens update their perceptions of party positions in a way that parallels the changes in experts’ perceived positions not only with reference to the general left-right orientation, but also in terms of the attitude towards the European Union integration. In fact, Dalton (2015) also warns that the strength of the representation linkage may change across multiple issue domains, and therefore an exclusive focus on the general left-right may reveal a partial picture.

In front of such a rich set of supporting evidence for the populist view of a responsive representation and electoral democracy, it may come as a surprise the lack of consensus around this account of representative democracy. Furthermore, the recent election of Donald Trump as president of the United States reinvigorated the disagreement against the populist model of democracy, provided that the candidate least competent, more extreme, and the one presenting the most fragmented and ambiguous policy platform won the presidency against the predictions of the almost unanimity of commentators and political scientists³. Opposition to the populist account of democracy stems from a radical critique of the party linkage model, in which the ‘realist’ view of democracy turns the electoral process upside-down: “Our view is that conventional thinking about democracy has collapsed in the face of modern social-scientific research.” (Achen and Bartels 2016, p. 12). Achen and Bartels (2016) support a

³ With a rational and uncertainty-averse electorate, the median voter theorem would have predicted Clinton victory in a landslide. Clinton won the popular vote by about 2% points (more than 2 million absolute votes), but this is far from being a landslide.

vision of democracy as dominated by inattentive and uninformed voters, engaging in the task of selecting their leaders by means of a popular vote that is driven by psychological mechanisms of ingroup loyalty and outgroup resentment, rather than by policy considerations: “Voters, it seems, are what they are, and not what the idealistic proponents of popular sovereignty might wish them to be. The folk theory of democracy is of little use in understanding actual democratic politics.” (Achen and Bartels 2016, p. 36). According to this perspective, voters’ ideology and issue preferences are endogenously produced by partisanship and group belonging. This fundamentally undermines the responsive character of electoral competition, transforming the evidence from issue voting models into an ‘illusion’:

“[M]ost residents of democratic countries [...] do not know the details of even salient policy debates, they do not have a firm understanding of what the political parties stand for, and they often vote for parties whose long-standing issue positions are at odds with their own. [...] For most citizens and most of the time, party and group loyalty are the primary drivers of vote choice. Thus, the folk theory of democracy fails. For the same reasons, so do scholarly renditions of the folk theory, including mathematical versions like the spatial theory of voting.” (Achen and Bartels 2016, p. 299).

In this thesis, I advance a methodology that can contribute to disentangle these contrasting views around the ideology-linkage of the party government model, in which ideological preferences are hypothesized to drive voters’ choices, creating a close connection between the policy options offered by the parties and the policy preferences demanded by the voters. The conditions for the issue-voting process⁴ are cognitively demanding tasks when referred to the whole plurality of issues of the day, but ideology provides voters with simple heuristic cues that alleviates the information burden of the (not so simple) act of voting. The conditions of issue voting can therefore be translated in terms of a single ideology scale as follows: 1. voters can express an ideological projection of their own policy preferences; 2. voters can perceive political parties as characterized by distinctive ideological positions; 3. the discrepancy between voters and party positions drives voting decisions. Dalton, Farrell, and McAllister (2011) show that across a large of countries (including Western and Eastern

⁴ These conditions have been firstly defined in *The American Voter*: “1. The issue must be cognized in some form. 2. It must arouse some minimal intensity of feeling. 3. It must be accompanied by some perception that one party represents the person’s own position better than do the other parties” (Campbell *et al.* 1960, p. 98).

Europe, North and South America and East Asia) the three requirements are indeed satisfied, as: 1. most voters can place themselves in terms of a Left-Right scale; 2. voter perceptions of political parties' positions match closely experts' informed judgements; 3. "Congruence between the orientations of the voter and the party are a very strong predictor of the vote." (Dalton, Farrell, and McAllister 2011, p. 19).

The problem is that the realists move a subtler point that is not addressed by this type of evidence. They stress that the correlation between issue proximity and voting preferences can be related to three different mechanisms:

"The first, *policy-oriented evaluation*, corresponds to the conventional interpretation of issue voting in the folk theory of democracy [...]. The second, *persuasion*, involves prospective voters altering their own issue positions to bring them into conformity with the issue positions of the candidate they favour. The third, *projection*, involves prospective voters convincing themselves that the candidate or party they favour has issue positions similar to their own [...]. In both the second and the third cases, "issue proximity" is a *consequence* of the voter's preference for a specific candidate or party, not a *cause* of that preference." (Achen and Bartels 2016, p. 42).

The first attempts to address this source of endogeneity date back to the 1970s, and included the use of non-recursive simultaneous equation models with panel data. Markus and Converse (1979), on the one hand, and Page and Jones (1979) on the other, applied this type of modelling strategy on the same panel dataset, the Center for Political Studies (CPS) data covering the 1972 and the 1976 U.S. presidential elections. Page and Jones (1979) found: "clear evidence of reciprocal causation between policy orientation and overall candidate evaluations". Markus and Converse (1979) concluded underlining: "the causally prior impact of issues and parties on [candidate] assessments", signalling only modest projection and persuasion effects.

The 2S-BAM methodology that I propose in this thesis, it is based on the Aldrich and McKelvey scaling approach that can alleviate this sort of psychological differential interpretations of the issue scale:

"Aldrich-McKelvey scaling is a powerful method that corrects for differential-item functioning (DIF). [...] DIF arises when respondents interpret issue scales (e.g. the standard liberal-conservative scale) differently and distort their placement of the stimuli [political parties] and themselves." (Hare *et al.* 2015, p. 759).

In particular, the 2S-BAM model requires voters to indicate a coherent ranking of political parties. If the ranking reported is not coherent with party DIF-corrected positions, then this means that the voter does not possess enough information to develop a coherent map of political parties' positions. If this is the case, the individual discrimination parameter (see section 4.2 for greater detail) of these individuals will be close to zero or negative. In this way, 'self-persuaded' and 'projecting' voters can be identified, to the extent to which: 1) the projection implies an unreasonable modification in the ranking of the parties; 2) the self-persuasion is correlated with their prior ideological identity. As I show in section 5.7.4, the omission of these voters does not undermine the correlation between voting preferences and ideological discrepancies, which is actually strengthened. I read this as a sign that scales incomparability can artificially lessen the correlation of issue proximity and voting preferences.

In fact, persuasion and projection are only one part of the problem, and scale distortions actually include a wider range of errors and incomparability whose role is less known and underestimated. There are unfortunately additional problems beyond perception and projection. Notably, the distribution of voters' left-right self-placement shows that apparently the median voter is almost invariantly placed on the middle (usually 'five') category. This simple observation reveals a basic inadequacy of standard measures, in that they are unable to actually capture shifts or country differences in the actual position of the median voter. Strikingly, section 5.6.2 reveals how in some cases the median voter does not exist at all, given the bi or even tri-modal distribution of voters' DIF-corrected positions. In section 6.3 I provide a first systematic and comparative assessment of perceptual distortions to show that moderation bias does indeed significantly distort voters' perceptions.

Discussing the results from a first application of the BAM model to the US case, Christopher Hare and colleagues write:

For the public as a whole, though, self-placements on most of these issue scales—particularly the liberal-conservative scale—follow an approximate bell curve pattern, and this has important implications for measuring polarization in the mass public [...]. What is left out of this discussion, however, is an analysis of how DIF biases respondents' self-placements on the liberal-conservative scale. Our findings in the previous section clearly lead to the hypothesis that DIF should understate the true level of ideological

polarization in the electorate. Ideologues and partisans tend to push stimuli (including themselves) too far to the opposite end of the scale, and many self-identified moderates are not true centrists. (Hare *et al.* 2015, p. 766).

Therefore, a crucial aspect of DIF distortions is that they are *systematic* sources of measurement error. This thesis expands the previous finding in a first comparative assessment of DIF distortions. As I show in section 6.5, standard polarization indices indeed capture to a large extent voters' perceptual distortions rather than objective polarization in the party systems. The fact that perceptual distortions are systematic errors also undermined the validity of the 'miracle of aggregation' argument: in the logic of the Condorcet Jury Theorem, the errors of the voters should be independent for the electorate to be 'wiser' than the voters. Whether the errors truly cancel out in the aggregate, it is an empirical question that should be directly addressed relaxing the radical assumption of direct comparability of voters' perceptions.

Not only can voters position themselves as 'illusory moderates' (Hare *et al.* 2015, p. 764), but politically unaware voters can use the middle category to avoid the discomfort stemming from 'Don't Know' answers. Systematic 'centring' error has been shown to affect survey-based measures of left-right party positioning (Volkens *et al.* 2014). Again, a scaling approach can mitigate such systematic distortions to the extent to which the mid-category guessing violates the correct rank-order of party placements.

Finally, scale distortions are not exclusively affecting voters, but —as shown above in the example of political efficacy in China and Mexico— apply to cross-country comparisons. Importantly, it has been shown that the general left-right scale has a different substantive meaning when applied in Western and in Central-Eastern Europe (Rohrschneider and Whitefield 2012; Rohrschneider and Stephen 2012). Differences in the meaning assigned to issues across countries may also equally apply to the European Integration issues. As I explain in sections 3.7 and 4.3.2, a consequence of the country-specific meaning assigned to political scales is that a direct comparison in a comparative setting will implicitly assume that the same value indicating a party positions in different countries indicates the same position, when this is unlikely to be the case. One possibility to overcome this issue would be to narrow down the set of cases to subgroups of more culturally and politically similar countries (e.g. separating Mediterranean, North European, Central and East European countries). This

approach is not feasible when investigating the effects of aggregate-level characteristics such as polarization indices, that require a sufficiently high number of cases in the analysis. For this reason, in the second stage of the 2S-BAM model, I follow a second approach that consists of explicitly estimating country-specific distortion parameters with the aim of recovering direct comparability.

For all these reasons, the lack of more aware models and methods to place voters and parties is a noticeable absence in representation studies. Unless the source of systematic error in voters' perceptions of party positions are corrected, additional evidence on the validity of spatial and issue voting models runs the risk of being perceived as just 'more of the same' by the proponents of the realist view of democracy.

1.5 A roadmap to the thesis

This thesis is aimed at two different types of reader: the methodology-oriented scholar and the analyst of comparative political behaviour. The first type of reader is interested in incorporating scaling methods in the survey data toolkit to correct for respondents' DIF, to reveal the existence of latent political dimensions, to investigate the sources individual's scaling distortions, to achieve more satisfying positions for items that are evidently misplaced, to improve the predictive ability of spatial voting models or, equivalently, achieving more correct specifications of spatial voting models. The analyst of comparative political behaviour would be more interested in the substantive consequences of more effective measurement strategies. The elements that this type of reader can appreciate include the main finding that, on average, European party systems appear to be structured according to the EU integration dimension, the novel design to study the underlying structure of electoral competition, the theoretical model of the change in the electoral structure, the conceptual discussions around the demand (voter availability) and the supply side (decidability) conditions for a responsive electoral competition, and the account of the various measurement strategies for those concepts. In the rest of this section I briefly review the chapters of the thesis, highlighting the elements that our two types of readers may find interesting.

Chapter 2 contains the theoretical considerations, the driving research questions, and the thirteen empirical hypotheses formulated in this study. The theoretical framework presented in Chapter 2 is based on a narrow set of basic intuitions that were partly pointed out. In a nutshell, voters' DIF distortions can undercut our ability to detect the current structure of electoral competition in European party systems: unless the subjective component of voters' perception is separated from the actual (objective) component of party positions, the use of standard measures of party system polarization leads to an overestimation of the role played by the traditional left-right dimension. To understand why this may be the case, I present the first comparative investigation of voters' DIF distortions.

Thus, the first part of the chapter (sections 2.1 and 2.2) presents some preliminary methodological issues, and section 2.3 develops three sets of hypotheses: the first set (H1-H4) aims to explain latent lateral shifts in voters' perceptions. This corresponds to the case where respondents perceive the latent space as shifted towards one side. For instance, some voters perceive parties as more to the right (left) than they actually are, and this corresponds to a positive (negative) latent shift. The second set of hypotheses (H5-H8) investigates voters' latent scale distortions, which relates to what extent voters stretch or compress party positions. Finally, the third set (H9- H10) conjectures that DIF-inflated party positions will bias the index of party-system polarization. Next, the chapter moves to the substantive component: the theoretical model of the restructuring of European electoral competition is presented in section 2.3. Here, I present a model of electoral competition based on the idea of conflict between production factors derived from David Ricardo's classic theory of economic growth. The fourth and last set of hypotheses (H11-H13) thus deals with the underlying structure electoral competition. Finally, Section 2.4 adds further considerations and concludes. A compact version of the full list of hypothesis that includes dependent variables, key independent variables, and expected relationships is reported in the empirical chapter (Table 6.1 in Chapter 6).

Chapter 3 accounts and justifies the deductive measurement approach that was chosen in this thesis. The chapter first discusses the key construct of party-system polarization (Section 2). Section 3.3 moves one step further, investigating the properties and the best measurement strategies to pinpoint the underlying distribution of policy positions subsumed by any measure of political polarization. Summarizing, the researcher has to choose between

a more inductive and a more deductive approach. I argue for the latter, suggesting that theoretical guidance represents an essential component of the measurement strategy. Then, the chapter follows with a detailed explanation of the problem of incomparability, explained as an omitted variable problem (section 3.4). This leads to the problems of direct incomparability between voters and party positions (3.5), the incomparability among voter positions (3.6), and the direct incomparability of positions across countries (3.7).

Chapter 4 presents the estimation framework proposed in this thesis, which can be defined as a two-stage Bayesian Aldrich-McKelvey model (2S-BAM). Sections 4.1 to 4.4 deal with the specifications of the model. Overall, the 2S-BAM approach leads to twenty-three equations, reported in Appendix L. The first stage of the model (4.3.1) allows estimating voters' specific DIF distortion parameters together with meaningfully comparable positions of political parties, i.e. mapped on the same country-specific latent space. I achieve this using a Bayesian Aldrich-McKelvey scaling approach. In the second stage (4.3.2), the model bridges twenty-seven country-specific latent spaces to project the measures on the European Common Space (ECS). The second stage relies on the strategy proposed in (Lo *et al.* 2014): the basic idea is to exert leverage on national political parties' membership of European Parliament political groups. This anchoring information is exploited to apply the Bayesian Aldrich-McKelvey scaling for the second time to simultaneously estimate the country-specific DIF distortion parameters, and the ideal points' positions for EP political groups. The chapter concludes with additional remarks and explanations.

Chapter 5 is the first of the two empirical chapters and contains information on the data (Section 5.1), the whole estimation process of the 2S-BAM model (Section 5.2), and the evidence of Markov Chain Monte Carlo (MCMC) convergence (Section 5.3). Then, the reader is familiarized with the ideal points. Section 5.4 provides a first glimpse of the voters' ideal points. Section 5.5 presents political parties' ideal points returning to the initial puzzle of the positions of Italian and British voters, showing party positions as estimated with the new measurement approach. The chapter then continues with summaries and validates the new measures. The large amount of data is represented graphically. Section 5.6 reports descriptive plots for voters' DIF parameters, voters' ideal points, political parties' ideal points, country-level DIF parameters, and the ideal points of the EP political groups. Finally, Section 5.7 reports summaries from the validation tests: simple rank-order correlations,

comparison of country-specific Root-Mean-Square Error, rank-order correlations on the European Common Space, and the test of predictive validity assessing the ideal points in individual models of proximity voting.

Chapter 6 moves on with the empirical tests of the thirteen hypotheses presented in the theoretical chapter. After a short introduction (Section 6.1) providing a summary of the hypotheses, Section 6.2 goes into greater detail for the modelling strategies and the operationalization of the main variables. In Section 6.3 the first set of hypotheses (H1-H4) on voters' latent shift distortions is tested. Section 6.4 deals with the empirical tests of hypotheses H5-H8 concerning latent scale distortions. Section 6.5 considers two different versions of the Dalton index of party-system polarization. The first version is the standard Dalton index, built using voters' raw average perceptions taken as indicators of party positions. The second version is the Dalton index computed with the produced ideal points' as party positions. In this section I show how the standard Dalton index correlates strongly with voters' DIF parameters, while the ideal points' version does not. Finally, Section 6.6 reports the key models testing the hypotheses regarding the structure of electoral competition in Europe.

Chapter 7 firstly summarizes the main findings (Section 7.1). Section 7.2 discusses the important aspect of whether these findings, obtained with EP data (the European Election Survey), should apply to domestic representation as well. Section 7.3 then offers additional reflections on the two measurement strategies (the naïve approach and the measurement-aware approach). Section 7.4 contains a critical reading of the main finding that the integration-demarcation dimension, represented Europe-wide by the polarization on the EU integration dimension, is currently structuring European electoral competition. Sections 7.5 discusses the main underlying assumptions and the limitations of this research. Section 7.6 goes on to list a number of possible designs and extensions that future research could address. Section 7.7 concludes the thesis with a value-loaded speculation about a future Europe as a political project from the perspective of a European federalist.

Chapter 2 — Nothing but perception? The theoretical linkages between subjectivity, polarization and electoral competition

I am assuming that voters can meaningfully place political parties along a Left-Right continuum. Some may question whether a single dimension is sufficient; but this often yields a good approximation of the basic cleavages in a society [...] even if one argues that the placement of a party is incorrect, this is still the placement that the public perceived and this is what should influence their behavior. To the electorate, their perceptions are reality.

Dalton, Russell J. (2008).
The Quantity and Quality of Party Systems.

2.1 Subjectivity and complex concepts: not everything that counts has been counted

Measuring complex concepts such as political efficacy or left-right ideology is a common task for an applied political researcher. A complicated concept generally consists of a multidimensional compound of attributes, which can make the measurement effort daunting. Sociologist William Bruce Cameron once wrote: “It would be nice if all of the data which sociologists require could be enumerated because then we could run them through IBM machines and draw charts as the economists do. However, not everything that can be counted counts, and not everything that counts can be counted.” (Cameron 1963, 13). Qualitative researchers have long argued that measurement is the pillar of empirical evidence, and everything that affects our measures will inevitably affect our conclusions.

Uncountable elements — such as subjective interpretation and other idiosyncratic effects — affect our measures, and the more the concept under empirical scrutiny is open to interpretation the greater the weight of these unobservables. This is particularly true for the

complicated concepts that lie at the core of political theory. The concept of ideology, for instance, is an elusive yet crucial construct when it comes to understanding political actors. It is multidimensional, in that it inherently involves multiple conceptual attributes. In Converse's famous definition, although he referred to "belief system", ideology is condensed as "[...] a configuration of ideas and attitudes in which the elements are bound together by some form of constraint or functional interdependence." (Converse 1964, 209). This definition is a re-elaboration of the previous definition of ideology as "attitude structure" in *The American Voter*: "We speak of an "attitude structure" when two or more beliefs or opinions held by an individual are in some way or another functionally related." (Campbell, Converse, Miller and Stokes 1960, 110). These "functional-interdependence" definitions assert that complicated concepts such as ideology not only involve multiple attributes, but more importantly they underlie the functional relationship between them (Jost, Federico and Napier 2009). In this sense, concepts such as ideology represent holistic ideas, as the meaning of the entire construct is not the same as the sum of its components. This interdependence is critically important because it signals the presence of systematic ties in the constitutive components of the concept.

Functional interdependence is a peculiar conceptual feature. On the one hand, it adds complexity to the empirical task of measurement, and on the other it creates an unobservable, yet detectable, structure. In the measurement phase, this interdependence is what ultimately allows for the quantification of the relationships between the multiple components of the construct. All dimensionality reduction techniques (such as PCA, Canonical Correspondence Analysis, Multidimensional Scaling) eventually rely on the existence of an underlying latent structure. In fact, all these techniques apply leverage on the information from multiple observable indicators to gauge an unobservable latent construct, corresponding to the multidimensional concept being evaluated.

Measuring latent concepts

Measurement theory and latent variable modelling has provided a set of tools with which to measure complex concepts. Contributions in the field include the work on Multidimensional Scaling (MDS), that provides graphical representations of similarity data in terms of a set of principal coordinates on a spatial map, and Optimal Classification, a non-metric unfolding

technique).⁵ The mathematical counterpart of graphical representations such as MDS was developed in psychometrics and psychology, being motivated by the need to measure complex concepts such as intelligence, or more specific forms of test-takers' ability. This school of studies has produced a class of models known as Item Response Theory models, or Latent Trait Models, or Modern Mental Test Theory models (Rasch 1960; Andrich 1988; Embretson and Reise 2000; Baker and Kim 2004). IRT models differ from classic Likert scaling in that they interpret the probability of a response not only as a function of features of the test-taker, but explicitly include features of the stimuli used in the rating process. For instance, in the classic application of test scores to uncover test takers' latent ability, IRT models jointly produce parameters capturing test-taker's ability together with the difficulty of the test items used, as in the one-parameter IRT (Rasch model). Similar models were also developed in economics, for instance to study consumers' choice with pick-any/N models (Coombs 1964).

In the early 1980s, political scientists Keith Poole and Howard Rosenthal developed a "*basic-space theory of ideology*" (Poole 2005; Poole and Rosenthal 1997) that became the basis for a latent variable approach to the study of political ideology. Their contribution included the estimation of legislators' latent ideology scores (ideal points) by modelling a matrix of roll-call votes as observable choice-indicators. The empirical framework of their work largely relied on the integration of Random Utility theory (Manski and McFadden 1981; McFadden 1976) and Optimal Classification. The underlying theoretical framework consisted of the spatial theory of voting in its conceptual (Black 1948; Downs 1957; Hotelling 1929) and mathematical (Davis, Hinich and Ordeshook 1970; Enelow and Hinich 1984) foundations.

Revealed and stated preferences

If Poole and Rosenthal's work has opened the black box of latent measures of ideology, the problem of measuring positions of political actors whose preferences were not recorded in hard form (e.g. roll-calls or other types of registered choices such as financial contributions data) remained. Thus, the task of investigating voters' ideology has been almost invariantly faced by simply asking survey respondents to place themselves on that scale. In practice, this

⁵ For an excellent introduction to Optimal Classification see (Poole 2005).

means that we are trading objective-but-unavailable revealed-choice data with subjective-but-available stated (or perceptual) data.

There are reasons to prefer hard choice data over reported perceptions. First, facts are facts. The occurrence of a fact is not subject to interpretation, in the same way as motives and meaning. For instance, to say that 'MP X voted No to decree Y' is an unambiguous statement. Its meaning can be interpreted in the light of different justifications, but in the last instance the behaviour in itself cannot be contested. To understand reality, what *has happened* often matters more than what *might have happened* in different circumstances. Moreover, facts are directly comparable whereas perceptions are not: recorded behaviour — money donated to a party, votes in an assembly — are anchored to the same factual circumstance. If two MPs vote differently, they are by definition voting the same piece of legislation. Thus, we can consider that many votes on multiple pieces of legislation produce a synthetic score for the position of MPs. By contrast, when we ask an individual to report their position this will depend on how the person projects the concept to be measured.

Is this change in measurement strategy risk-free when it comes to measures in applied political research? Unfortunately, the answer is 'no'. The standard approach of interpreting voters' reported perceptions directly is flawed, and leads to systematic measurement error, inconsistent estimates and faulty inferences. The logic of dimensionality reduction and scaling techniques consists of measuring a latent construct by applying leverage on the information from multiple related observable indicators. This logic should not be dismissed when using perceptual, rather than choice, data. Yet, this is the practice in current research: instead of pulling together various sources of observable information into a synthetic latent construct, the measurement strategy generally advances a strong comparability assumption that simply takes subjective perceptions as objective positions. This leads to the paradox that great care is taken in estimating latent scores of complicated concepts when indicators of recorded behaviour (i.e. revealed preferences) are available, whilst heroic assumptions are routinely invoked when it would be wiser to be exert caution, as in case of stated preferences and reported perceptions.

Such simplifications are hardly defensible on theoretical, let alone empirical, grounds. This is suggested by the convergence between the sociological and psychological approaches on the topic, with sociologists acknowledging the importance of cognitive processes for the

development of culture, and the psychologists underlining the importance of cultural influences on individuals' cognition (DiMaggio 1997). From both these traditions, researchers have converged towards a culturally-determined view of cognition. This understanding of cognition as influenced by culture and identity is particularly important in the case of complex concepts such as ideology, whose attributed are linked by functional interdependence. Thus, one of the main themes of this thesis is that cognitive and cultural idiosyncratic (and group-level) effects can change the meaning assigned by voters to the left-right ideology and to their position on EU integration. This can occur in two ways: on the one hand, subjective interpretation of these two complex concepts can affect the two endpoints of the space that voters have in mind, thus generating lateral distortions. On the other hand, it can have an impact on the metric used by voters to evaluate distances between political actors, thus generating latent stretches or compression.

Sketching the model: the two-step flow of subjectivity

A measurement model of voters' perceptions can restore direct comparability by explicitly estimating the distortion parameters. The logic of scaling techniques is similar to the one underlying the analysis of choice-data, in that it exerts leverage on multiple observable indicators in order to estimate the latent scores on the scale of interest. The model, together with the estimation process, is explained in detail in Chapter 4. In this section, I present a simplified sketch to familiarise the reader with the basic intuitions before approaching the math, and relating it to the research hypotheses.

Let us now consider the classic problem of comparing voters and parties' positions using perceptual data. This is a basic task in various research settings: in representation research, the comparison enables us to say to what extent the political offer is congruent with the political preferences of voters; in electoral research, spatial voting or issue voting models interpret the distance between voters and parties as a key determinant of voting preferences; in public opinion research, it addresses the issue of how information can affect the public perception of a party's policy stance.

Researchers generally position voters and parties on an ideological left-right continuum which corresponds to an assumption of unidimensionality of the political space.⁶ The classic operationalization proceeds in the following way: the researcher classifies voters through the self-reported positions expressed in terms of the left-right scale; then, the positions of the parties are obtained by asking voters to place the political parties on the same left-right scale. In some cases (Markus and Converse 1979; Rabinowitz and Macdonald 1989), researchers will place the parties on the raw left-right average computed on some subset of respondents (e.g. those reporting to turnout, or partisan voters), in other cases (Adams, Merrill, and Grofman 2005; Calvo and Hellwig 2011), distances between voters' self-reported and individual perceptions of parties' stances are computed.

Both procedures rely on a flawed logic. In the first case (computing average party positions), the problem lies in the hidden assumption that voters' have a unique perception of the party, which is not true. In fact, in order to produce a value representing the single party position — which is correct — the researcher has to sacrifice all the variation in voters' perceptions. In the second case (considering all reported party positions), the problem is that no single value representing the party position is identified, *as if* an objective party position does not exist. Therefore, the first approach is missing the subjective component of voters' perceptions, while in the latter, in order to preserve it, pays the inadmissible cost of neglecting objective reality. It is then clear that we need a methodology that enables us to compute single party positions while also considering that voters' perceptions can be different.

The two standard procedures just considered further rely on a strong assumption of direct comparability. Chapter 4 presents a measurement model that relaxes this assumption and which I sketch out here to facilitate understanding of the research hypotheses. The main feature of this model is that it explicitly considers the subjective construction of political scales, in the form of two linear latent distortion parameters: a *lateral shift distortion* parameter, considering lateral individual misperceptions, and a *shape (or scale) distortion* parameter, modelling the subjective misperception of policy distances.

⁶ This aspect is fully covered in Section 3.3.

Thus, we can represent *perceived* party positions as a linear combination of *actual* party positions and latent individual distortions as follows:

$$y_{ij} = a_i + b_i z_j;$$

where: y_{ij} is the policy position of party j as reported by voter i ; a_i represents the idiosyncratic lateral shift distortion; b_i is the idiosyncratic scale distortion; and, finally, z_j is the actual policy position of party j .

The first parameter, a_i , means that voters are allowed to perceive the political space as ‘shifted’ to one side, so that they may not share the centre position of the policy space. Thus, positive values correspond to a latent distortion to the right and vice versa. The second parameter, b_i , means that voters can also differ with respect to the distance metric they perceive in the political space. Some voters (i.e. $b_i > 1$) may perceive a broader set of available policy options, meaning greater choice availability on the supply. For other voters (i.e. $b_i < 1$) *the same objective political supply* will be perceived as narrower, with closer policy options. The key point here is the perceptual and idiosyncratic character of this type of latent distortions: the positions expressed by political parties are indeed the same, but what changes is how these differences map out in the mental representation of voters. Therefore, the researcher should be able to reconstruct this second element to map all voters’ perception into a ‘common latent space’.

Perceptual distortion as product of cognition and identity

We can think of perceptual data as originating in a two-step process in the form of what cognitive psychologists define as a ‘deliberative’ cognition (D’Andrade 1995). In the first step, the respondent elaborates a ‘pure’ (i.e. latent and unobservable) representation of the position. In the second step, this latent position is reported to the interviewer, and thus made observable, in terms of respondents’ personal interpretation of that scale. The response is thus the synthesis of two elements: the personal experience of mental perception, and the representation of the scale on which the perception is reported. The latter element is crucial. It is connected, on both the personal experience of the respondent with the political scale and

together with the items to be placed and to the socio-cultural representation of the and items. As I argue below, the first aspect depends on respondents' cognitive abilities, whilst the latter is connected with an individual's group-identity. It has been observed that this second socio-cultural element in particular has a polarizing potential:

The existence of group-level cultures (shared understanding partly independent of individual beliefs) is also suggested by the tendency of groups to adopt public positions more extreme than the preferences of their members, especially when acting with reference to a contrasting group. What is striking is not polarization *per se*, but the cultural availability of polarized stances (representation of collective opinion) on which members of each group can converge (Takfel 1981). (DiMaggio 1997, 273)

Thus, the respondent reports their perceptions on a scale that is primed by the interviewer, but whose meaning is ultimately defined in the respondent's own mind, conditioned by personal cognition and group-identity. The reported value which results from this scale-projected perception thus incorporates two distinct elements: the objective element of political parties' positions, and the subjective element of the interpretation of the underlying political space in which the position is expressed. As I stress throughout this work, the direct comparison of the political positions expressed by different voters implicitly assumes that the political space in which the reported values are mapped is the same, but we have no reasons *ex-ante* that justify this assumption.

To recap, assessing political positions through recorded behaviour is preferable but not always feasible. When the object of the study is the voter, perceptual data are often unavoidable. If this is the case, we should try to identify the additional problems involved working with reported perceptions. In particular, the suspect — that will be substantiated throughout this work — is that both cultural and cognitive specificities of the voter will undermine direct comparability. In the following sections, I argue that the socio-cultural element linked to group-identity can be identified with the ideological and partisan identity of the respondent, and produces particularly lateral misperceptions (shift distortions). On the other side, the subjective-individual component is linked to the amount of information available to respondents, which can produce scale misperceptions (shape distortions) that magnify or constrain the perception of differences across political parties. Subsection 2.3.1,

in particular, develops hypotheses that explain shift distortions (indicated by a_i), while subsection 2.3.2 develops hypotheses explaining scale distortions (b_i).

2.2 Cognitive bias in voter perception: explaining idiosyncratic errors

Measuring preferences with perceptual data is not necessarily a bad approach, especially because it is often the only strategy available. Yet we must be aware of the threats for our measures involved in this type of data. Psychological research on decision-making, sociological research on the effect of culture on cognition, and the field of behavioural economics offer a list of potential deviations from the normative-rational outcome of individuals' perceptions and judgements.

The roots of this idea can be traced back to Kant's principle of subjectivity (Nevid 2007), if not to Plato's definition of knowledge as *nothing other than* perception. More recent social cognition research has stressed the point that all perception is inherently subjective: "in order to understand how individuals behave in the social world we need to understand how individual *think* about the social world."⁷ (Bless, Fiedler and Strack 2004, 199). Moreover, we know that how individuals convert the objective world into subjective reality is also affected by a number of mechanisms, including selective attention and information processing (Festinger 1957; Gerber and Green 1999), and by other forms of biased reasoning which can originate both from more passive cognitive forms such as the selection of cognitive shortcuts (Popkin 1991), and from more active cognitive activities such as confirmation bias and motivated reasoning (Lodge and Taber 2013). An exhaustive explanation of why and how individuals construct their social reality is beyond the scope of this thesis, which instead focuses on the consequences of social cognition in terms of perceptual bias, rather than on its causes. In the previous section, we identified two promising perspectives for dealing with the subjective interpretation of reality (thus, in this sense, a 'social' reality): the first refers to the group-identity of individuals (DiMaggio 1997; Tajfel 1970, 2010); the second deals with the cognitive resources available to individuals to access and process political information (Zaller 1992).

⁷ Italics in the original text.

These two explanations are dealt with more fully in the two following subsections. The first relates the lateral shift distortions of voters' perceptions, connecting them to the political group-identity of the voters. The second articulates theoretical hypotheses that explain scale distortions affecting individuals' distance metric, proposing a link with the amount of political information available to voters.

2.2.1 Misplaced locations: where the others are depends on where you are

Here I tackle the existence of lateral distortions of voters' perceptions of the stance of political parties. In terms of the previous formula of voters' perceived party positions the focus here is on the intercept term a_i . The reader must bear in mind the latent nature of this individual component. In fact, I stress that one of the main advantages of the model discussed in Chapter 4 over panel data estimation, in which idiosyncratic (i.e. time-invariant) effects are dealt with by differencing, is the ability to provide explicit estimates of these latent idiosyncratic distortions, thus allowing us to test hypotheses that can throw light on their nature and driving factors.

An important source of bias in individuals' judgement has been identified in the form of *ingroup favouritism*, or the systematic tendency to report more favourable perceptions for actors belonging to the same group as the respondent. The counter-part of this mechanism is the systematic tendency to generate perceptions, considerations or arguments that discard actors who do not belong to the ingroup, or even more so that belong to an outgroup (*outgroup negativity*). Ingroup favouritism and outgroup negativity are rooted in social identity theory (Tajfel 1970, 2010). This claims that the feeling of belonging to a particular social group influences the definition of an individual's identity, which, in turn affects their perception of their political surroundings. In political science the most relevant social identities have been defined in terms of partisan and ideological identification (Campbell, Converse, Miller and Stokes 1960). It is reasonable to assume that the subgroup of voters that have developed a political identity, particularly in terms of an ideological identification, will report their perceptions on a political space with group-specific endpoints. This means that *even if* perceptions are the same, they can be reported in the form of different values because they are mapped into different reference spaces.

As already noted, the analysis of DiMaggio (1997) points to the conditioning effect of culture on cognition: “Sociologists of culture should turn their attention to factors leading to change in the distribution and level of activation of cultural representations or schemata in the population.” (DiMaggio 1997, 280). These *schemata* can change the reference map of voters’ ideology space as the shared meaning, generated by the group identity, affects the individual perceptions of the objects.

The previous considerations lead us to the following two baseline hypotheses:

H1 Negative linear effect of ideology: left-wing (right-wing) voters will be associated to latent lateral shifts of perceptions towards the right (left).

H2 Quadratic effect of ideology: the more to the left (right) the voter, the greater the shift of perceptions towards the right (left).

Hypothesis H1 captures the intuition that the latent lateral distortion of perceptions is expected towards the opposite side of the ideological spectrum, while hypothesis H2 completes the assertion, stating that the more extreme the ideological position of voters, the greater the expected effect of schemata on their perceptions.

Intuitively, left-wing voters are more likely to have developed and activated a cultural schema representing the ‘Left’, ‘Socialism’ or even ‘Communism’ as an emancipatory force sustaining human progress against backward reactionaries, bigots and fascists. Clearly, the mirror representation would work for right-wing defenders of the nation and traditions against the lazy state-protected socialists and communists. While these are clearly stylized vignettes of the schemata, the reader must acknowledge that every voter has some sort of simplistic schema — not different in kind from these ones — in mind which guides their perceptions.

Insofar as the previous consideration holds good, we should then identify the underlying mechanism of this association between ideology (more generally of group-identification) and latent lateral distortions of perception. I argue that this effect could be understood as the activation of a special form of *moderation bias*: ideologically extreme voters are generally less inclined to acknowledge their own extremism, and tend to place themselves, and their

'closest' parties slightly more towards the centre than they actually are. This means that they are perceiving, in terms of the coordinates of their own latent space, a position that is more moderate than is actually the case. At the same time, the outgroup counterpart of the moderation bias, that operates towards the ingroup, can lead the parties on the other side of the continuum to be perceived as more extreme than they actually are, again as an effect of the cultural schema internalized by respondents. This is expected to shift the political parties farthest from the respondent towards the opposite endpoint of the scale.

The presence of a moderation bias as the mechanism of latent lateral distortions of perception is compatible with the idea of moderation as an inherently good value in politics. This means that few voters with extreme preferences would accept the label of 'extremist' for themselves or for their closest parties. Nevertheless, it is likely that these objectively (but not subjectively) extreme voters would insist on the 'extremism' of others (the outgroup):

Defining extremism makes assumptions about the acceptable bounds of thought and behaviour. Identifying extremists, as such, is used to condemn the actions of opponents, implicitly or directly, and has justified censorship and persecution. As a result, individuals and groups tend to reject the label of extremist. (Fleming 2014, 395)

Moderation bias may also have heterogeneous effects in terms of distortions of perception across voter groups and beyond ideological extremism. I expect latent lateral shifts to affect some subgroups of voters more than others. The moderation bias can be seen as a double-faced process. On the one hand, it generates misperceptions through the cognitive bias of stereotypical misrepresentations of political objects. On the other hand, it can help produce an affective bias that converts positive emotions for the ingroup into closeness, and negative feelings for the outgroup into distance.

Considering the cognitive nature of moderation bias, I argue that the latent shift hypothesized in H1 should be stronger for people who are motivated to engage in political reflection. If that is the case, then voters would more often activate the schemata that reinforce misperceptions. In this sense, it should be the motivational channel of political awareness (i.e. the interest in politics, implying non-neutral and not necessarily factual information) rather than the resource/ability channel (implying greater factual and neutral political knowledge) that magnifies lateral misperceptions for ideologically extreme voters.

H3 – Conditional effect of ideology on interest in politics: *lateral misperceptions of more extreme voters are amplified in the case of a high interest in politics.*

We can also expect lateral shifts to be produced by affective elements that strengthen the perception bias. The most documented affective element in political science is represented by partisan attachment to party objects. Partisan voters may thus experience an overlap between the ideological and the partisan identifications that could increase the magnitude of idiosyncratic distortions. Therefore, I expect value predispositions (i.e. ideology) to be further reinforced by partisan predispositions, leading to larger misperception shifts for both extreme *and* partisan voters.

H4 – Conditional effect of ideology on partisanship: *lateral misperceptions of more extreme voters are amplified by the strength of partisan attachment.*

If the hypotheses presented in these sections are confirmed by empirical evidence, this would imply that the conventional use of perceptual data is systematically biased. Misplaced locations do not only occur, but can be estimated, predicted, and thus corrected. In the next section I provide a theoretical account of the second latent source of subjective misperception: scale distortions.

2.2.2 Stretched perceptions: information as ability to differentiate

In the previous section I presented a socio-cultural and group-identity account of lateral latent perceptual distortions. Now we need to formulate a theoretical explanation of perceptual distortions in the form of compression and stretching of the perceived political space. In terms of the previous formula of voter perceptions of party positions ($y_{ij} = a_i + b_i z_j$), this type of distortion refers to the term b_i . When $b_i > 1$, then a voter misperceives political parties as farther apart than they actually are, while when $b_i < 1$, then the voter misperceives political party as being closer than they actually are. Why would some voters misperceive the parties in this way?

The previous case of lateral shifts involved inherently one-directional distortions. Thus, this represents a phenomenon that is compatible with an ingroup/outgroup differentiation mechanism. In the case of scale distortions the explanatory factor has to produce respectively a latent shift of e.g. a left-wing party towards the left *and* a latent shift of a right-wing party towards the right, or the other way around (both left-wing *and* right-wing party objects towards the centre). The consideration that the first type of voter systematically over-perceives the extent of ideological polarization while the second type under-perceives leads to a separate set of hypotheses in section 2.4.

A useful theoretical perspective to explain this bi-directional latent distortion is Zaller's cognitive approach. This leads to focus on voters' cognitive heterogeneity where: "Every opinion is a marriage of information and predisposition" (Zaller 1992, 7). If the propensity to hold particular values, particularly in the form of an ideological identification, were exploited in the previous set of hypothesis as a potential explanation for unidirectional latent misperceptions, the informational component represents the most reasonable perspective to explain scale perceptual distortions. Following this line of reasoning we can develop four different hypotheses. The first one interprets scale distortions as the ability to discriminate, and thus connects them to the respondents' level of political sophistication: it would be difficult to perceive sizeable differences among parties unless the respondent knows enough about the two objects of comparison. Basically, knowledge can be defined as the ability to discriminate, and political knowledge is no exception. Ability to differentiate party positions thus appears to be reasonably connected with the availability of political information: only those who know where parties stand will also perceive their differences.

In contrast to the previous case of the lateral shifts, where the non-neutral motivation to collect information is expected to play a role, here it is probably the amount of neutral/factual knowledge that matters, although both sources could actually affect the extent of scale distortion. This leads us to the following hypothesis:

H5 – Positive effect of factual political knowledge: *voters characterized by greater political awareness will perceive larger differences among the positions of political parties.*

The second mechanism operates through a differential impact of political sophistication among moderate and more ideologically extreme voters, affecting the pool of considerations regarding the hypothetical political objects on top of the head of respondents at the moment of placing parties on the political scale. The 'Left' and 'Right' labels used to prime ideology scales are, in fact, mere abstract conceptual categories that only exist in the mind of the respondent. The endpoints of the scale are conventionally identified in numerical values such as 0 and 10. Such values are only nominal, namely empty numbers, unless we know what these endpoints mean in the minds of voters. More politically sophisticated voters could 'fill in' these two labels with a larger pool of potential political objects. They can refer to more extreme historical projections or smaller and more radical movements, rather than limiting themselves to real-existing non-marginal political parties. This could again facilitate their attempt to moderate the ingroup, i.e. to perceive themselves and the closer parties as less extreme than they are, by introducing another political object between them and the endpoint. This also means that they could artificially moderate the position of existing parties. This can occur in the case of highly sophisticated and ideologically extreme voters. Thus, we could find that ideologically extreme, politically sophisticated voters perceive smaller differences among parties, due to the fact that they have a much wider range of ideological positions in mind, and this ends in pulling together the listed parties and overstretching the metric.

These considerations lead us to the following conditional hypothesis:

H6 – Negative conditional effect of factual political knowledge on ideology: *greater political awareness leads to larger increases in scale distortions for moderate voters than for more extreme voters.*

A third type of explanation for variation in scales distortions of perceived party positions can indeed depend on a direct effect of voter ideology. However, as already pointed out, this non-unidirectional misperception is unlikely to be related to the specific ideological 'side', as was the case for the previous set of hypotheses on lateral latent shifts. Furthermore, the explanation is unlikely to be rooted in feelings of group belonging. Nevertheless, I have reason to believe that the notions of centrist/moderate/independent voters and of

ideologically extreme voters would help explain variation in the perceived dispersion of party positions. I advance two opposite explanations. On the one hand (H7a), we may expect larger scale distortions for centrist voters: to the extent to which it is reasonable to think (as in the H1 hypothesis) that extreme voters may produce a unidirectional shift of party positions towards the opposite direction, then centrist voters could be characterized by a bidirectional shift of both centre-right and centre-left party objects towards the extremes. If this is the case, then shifting party positions in both direction would have the practical consequence of stretching the distance metric of centrist voters (i.e. larger b_i). Along these lines, we can also complete this hypothesis explaining why more extreme voters may be associated with smaller scale distortions: this could occur if extreme voters' perceptions of party objects on the opposite ideological camp are relatively 'bundled' together. Extreme voters may be less able to discriminate between radical and more moderate parties of the opposite side of the ideological continuum because they already perceive the opposite moderate as radical. In a sense, this is an alternative application of the idea of outgroup negativity. But here the effect is that party placement remains 'cornered' by the nominal value of the endpoint (i.e. 10). To see this, think of a self-reported far-left voter who places a mainstream conservative party at value 8 on a [0, 10] scale. The consequence is that the voter will place a hypothetical populist far-right party at most at 10, just 2 points distant from the mainstream centre-right party, even though this may actually under-represent the difference perceived between the two parties. The mechanism can be described as a self-inflicted mathematical trap of the nominal scale, a cornering effect. In the light of all previous considerations I make the following statement:

H7(a) – Positive effect of ideological moderation: *centrist (ideologically extreme) voters will perceive larger (smaller) differences among political parties' positions.*

To this 'bidirectional shift/cornering effect' argument, we can oppose a different kind of mechanism working in the opposite direction with respect to H7(a): more extreme voters may simply develop a more confrontational view of politics, in which differences among parties are magnified. This view is in line with recent work on partisan-motivated reasoning (Bolsen, Druckman and Cook 2014; Leeper and Slothuus 2014), although from an ideological

rather than partisan perspective (see below). In the same way, moderate voters may over-represent compromise in the place of confrontation, and this would mean that they perceive parties as being closer together (i.e. smaller b_i). This results in the opposite prediction with respect to the previous hypothesis, namely:

H7(b) – Positive effect of ideological extremism: *centrist (ideologically extreme) voters will perceive smaller (larger) differences among political parties' positions.*

Finally, we should also consider the role played by partisanship in the form of a positive direct effect on scale distortions. Partisans are voters who decide to take side in the political arena in support of one part. It would be paradoxical for a voter who supports and identifies with a particular political party to report that all parties are the same. Partisans are those voters who recognize the difference between 'their' side, which they support, and the 'other' side, which they oppose. In this sense, we can imagine that partisan voters, as compared to independents, will systematically place parties wider apart on the policy space. This leads us to a final hypothesis:

H8 – Positive effect of partisanship: *partisan voters will perceive larger differences among political parties' positions.*

Non-ideologues and shape distortions

There is an important, albeit slightly technical, clarification to add before concluding this section. The shape distortion parameter b_i represents the equivalent of a discrimination parameter in a two-parameter IRT model. To develop the intuition around latent scale distortions, we should move back for a moment to the classic example of measuring the latent (unobservable) ability of test-takers using multiple (observable) dichotomous test results (i.e. right or wrong). The problem can be tackled by the following two-parameter Logistic Model:

$$\Pr(Y_{ij} = 1) = \theta(x_i\beta_j - \alpha_j);$$

where: $Y_{ij} = 1$ corresponds to a correct answer by test-taker i to test j , x_i is the latent intelligence/ability of test-takers, α_j is the difficulty parameter, β_j is the discrimination parameter and $\theta(\cdot)$ is a logit link-function. Now, α_j measures how difficult is the specific test j , while β_j indicates how good that same test is in discriminating test-takers in terms of their ability. The one-parameter version of the previous equation is the Rasch model (which basically assumes that each item has the same discrimination power). In a two-parameter IRT model this discrimination parameter is generally constrained to be greater than 0: $b_j > 0$. When this is not assumed, and indeed $b_j < 0$ occurs empirically, this normally implies that the item j is wrongly designed, as test-takers with higher values of latent ability would provide wrong answers more often than those with lower ability.

Projecting the IRT model in terms of our own latent perception distortions, the test-takers and the test items would be flipped, so that the latent ability x_j is in our case the latent position of party j and the two item parameters correspond to the individual distortion parameters. Therefore, when individuals are characterized by a scale parameter close to zero, $b_i \approx 0$, this means that these voters perceive all parties as having the same position on the considered predictive dimension or scale. Moreover, if $b_i < 0$ then voter i would be placing left-wing parties on the right, and *vice versa*. Empirically, when this only occurs infrequently, with only a few voters misperceiving party positions so badly as to ‘flip’ the sides, then it is a minor problem for the model as a whole and the conclusion is that these voters are unable to perceive ideological differences. Yet if we estimate negative values of the latent scale distortion parameter ($b_i < 0$) for a substantial number of voters, this would lead to the conclusion that the underlying dimension does not exist, or rather, it is not perceived by voters: they do not recognize this dimension as shaping the political competition. This, in turn suggests that either the arena of political competition is somewhere else, relating to a construct that has not been taken into account, or that most voters are indeed ‘cognitive misers’.

This sort of ‘ideological voter detection’ mechanism is a by-product of the model presented in Chapter 4 and allows us to empirically identify the ‘non-ideologues’ among the voters. In this sense, the Aldrich-McKelvey model can help resolve the problem raised by Converse (1964):

[I]t is for this reason that we have cast the argument in terms of constraint, for constraint and organization are very nearly the same thing. Therefore when we hypothesize that constraint among political idea-element begins to lose its range very rapidly once we move from the most sophisticated few towards “grass roots”, we are contending that the organization of more specific attitudes into wide-ranging belief systems is absent as well.

(Converse 1964, 30)

The argument of the non-existence of organization (i.e. functional interdependence) around the “wide-ranging belief systems”, such as the liberal-conservative continuum in Converse’s argument, is indeed an empirical issue. It may have been true at the time Converse was writing about the United States, but it is not necessarily true in contemporary Europe. Yet, the model provided in this thesis allows us to empirically identify those individuals who are unable to perceive the latent dimension and to exclude them from the tests of those theories (such as spatial voting) that do not apply for this category of ideological voter.

2.2.3 Errors-in-variables: the link between scale distortions and polarization

In the previous subsection I developed a set of deductive falsifiable propositions to help explain idiosyncratic latent distortions of voter perceptions of political parties. In particular, in the second set, involving scale distortions, I noted how these latent idiosyncrasies may amplify the perception of distances through larger ‘rulers’ (distance metric) adopted by voters.

To the extent to which this perception bias is not addressed, we can expect measures of party position in countries characterized by larger scale distortions to systematically over-represent the level of ideological polarization and, conversely, countries with lower values of individual scale distortions to under-represent polarization. For instance, following the conjecture in hypothesis H5, smaller shares of sophisticated respondents in a country — i.e. those who should better discriminate across party positions according to H5 — could artificially lead to smaller values of party system polarization. In much the same way, varying shares of independent/extreme voters (as per H7) may affect party positions. The key point here is that perceptual distortions may prevent researchers from observing the *actual* position of political parties, if they deal with unobservables *as if* they are dealing with observables. In general, we can go beyond the case of sophisticated and ideologically extreme

voters, and state the broader hypothesis that conventional polarization indices (i.e. produced using raw averages of perceptual data) may be systematically biased:

H9 – Systematic measurement error in polarization: *larger individual scale distortions will be associated with (spuriously) larger values of standard indices of ideological polarization.*

If the latter proposition holds, then this would signal a problem but not a solution. Yet, if the measurement model that is presented in Chapter 4 is able to distinguish objective positions from idiosyncratic effects (such as Differential Item Functioning), then these DIF-corrected values of party positions should lead to polarization indices that are uncorrelated with voters' scale distortions. This can be stated with the following hypothesis:

H10 – No systematic error in DIF-corrected polarization indices: *individual scale distortions will not be correlated with a DIF-corrected indicator of ideological polarization.*

Where 'DIF-corrected' in H10 means that political parties' positions have been estimated by taking into account the perceptual bias of voters, and are thus uncontaminated by voters' DIF distortions.

If the previous hypotheses are not disproved by the empirical test, this should make us very cautious about empirical findings produced with the standard polarization measures such as the Dalton (2008) index. To the extent to which we are able to show that scale distortions can artificially inflate ideological polarization, this source of error would be systematic and not random, potentially leading to inconsistent estimates and faulty inferences. This result is similar to the case of systematic measurement error in conventional regression models: when a variable x_i^* is unobserved and a variable $x_i = x_i^* + \eta_i$ is observed instead, where η_i indicates an idiosyncratic error, this leads to the inconsistency of the naïve least square estimator where x_i is introduced as predictor. When we adopt raw average reported perceptions of party positions to build polarization indices, we may (according to H9)

implicitly introduce idiosyncratic errors in the index (i.e. η_i in the conventional notation, or a_i and b_i in our case). The 2S-BAM (two-stage Bayesian Aldrich-McKelvey) model presented in Chapter 4 operates from this perspective as an error-in-variables model, in that it explicitly accounts for the possibility of systematic measurement error in the indicators of party positions. In the next section I will build on this point, presenting the hypothesis that systematic error in our measures of ideological polarization contributed to the misunderstanding of the current structure of European electoral competition.

2.3 Misunderstanding electoral competition: the confounding effect of measurement error in polarization

The previous section listed a number of theoretical hypotheses that provide a systematic explanation of DIF distortions in individuals' perceptions. Moreover, I have stressed that these idiosyncratic errors may affect the index of party system polarization. If the previous discussion is not falsified by empirical testing, we should be concerned about the possibility that systematic measurement error in polarization confounds our understanding of the basic functioning of electoral competition among European parties. In fact, flawed polarization measures could prevent us from understanding the relationship between the supply of political positions (where party system polarization would enter as error-inflated covariate) and the demands of voters.

In the next subsection 2.3.1, I present a synthetic theoretical review of the conditions for identifying the structure of electoral competition in party systems. I first recall the main contributions on this theme, starting with the idea of voters' electoral availability (i.e. openness to competition) as a necessary condition for cleavage change (Mair 1997, as in Part II and Part IV). I then focus on the importance of between-block electoral availability (Bartolini and Mair 1990). Next, I discuss the relevance of decidability (i.e. differentiability of policy packages proposed by political parties) on the supply-side as an additional condition for electoral competition (Bartolini 2002). Finally, I give an account of more recent contributions providing evidence of a 'Europeanization' of party systems (Caramani 2015) and for the emergence of a new European-integration/national-demarcation cleavage (Hutter, Grande and Kriesi 2016; Kriesi 1998; Kriesi et al. 2006).

Once the theoretical reconstruction is completed I move to subsection 2.3.2 where I present an empirical design to test two mutually non-exclusive empirical hypotheses about the structure of electoral competition in contemporary European party systems. The first hypothesis proposes that electoral competition unfolds along the traditional left-right cleavage between the left party block (mainly Communists, Socialists and Progressive Democratic parties) and the conservative block (Christian Democrats, Conservatives and nationalist/populist right-wing parties). The second hypothesis proposes an alternative structure of electoral competition, developing along the integration-demarcation cleavage (i.e. supporters vs. opponents of the project of European Union integration) between the block of mainstream parties (including traditional socialist and conservative parties alternating in government) and the block of challenger parties (representing the anti-establishment: radical, populist and anti-system parties of the right, left, centre, or post-ideological).

2.3.1 Physiology and pathology of European electoral competition

The classic account of European electoral competition (Rokkan and Lipset 1967) posits the organization of party systems as structured around four main cleavages⁸ (the ‘a-g-i-l’ paradigm) that has characterized European societies since the second half of the nineteenth century. Two confrontational lines were produced by the long-term economic transformations triggered by the industrial revolution: the class cleavage, opposing workers and tenants to employers and owners, and the urban-rural conflict between landed interests and industrial enterprise. The other two lines of conflict were originated by the Reformation and the formation of nation states: the religious cleavage opposing religious to secular governments, and the regional division between the centre and the periphery. Modern

⁸ For excellent discussions defining the concept of cleavage see (Bartolini and Mair 1990, 198; Kriesi 1998, 167; Mair 1997, 57). I rely of a synthesis of their arguments and define ‘cleavage’ as a concept differing from ‘social divisions’ or ‘political divisions’, in that it refers to three distinct conceptual attributes: 1) the social element of groups defining the structural/demographic base; 2) the normative element introducing shared beliefs and values that ultimately lead to a sense of identification and of self-consciousness as a unitary political subject; 3) the organizational element, through which the socially-structured and self-conscious group obtains an organized channel of political action and expression.

political divisions, the traditional argument goes, reflect the social divisions of the 1920s, crystallized by the introduction of universal male suffrage (freezing hypothesis).

The Lipset-Rokkan hypothesis thus gave rise to a rich literature which tested whether the freezing hypothesis was supported by electoral data (Daalder and Mair 1983; Rose and Urwin 1970; *contra*, the 'postmaterialist' and 'dealignment' approaches: Inglehart 1990; Franklin 1992). The most solid evidence for the lingering effect of the class cleavage was provided by Bartolini and Mair (1990), where a hundred years of aggregate-level West-European electoral data appear to indicate the persistence of the class cleavage along the twentieth century. In particular, they demonstrate the existence of a long-term negative trend in the levels of the left class-cleavage volatility (measured by the aggregate vote shares for parties belonging to the class-left electoral block), indicating the long-term consolidation of the class cleavage, associated with the process of institutionalization of left-wing parties after the mobilization phase of the 1920s.

Against this backdrop of a long-term consolidation of social divisions around a left-right alignment of political parties and social groups, the 'post-material' account (Inglehart 1990) presents a largely cultural interpretation of political divisions in Europe, detached from the socio-structural and 'demographic' elements. The thesis of the 'cultural' division was strengthened by the decline of the encapsulation of social structures and of the corresponding political alignments:

Few scholars deny that the classic social cleavages defined strictly in [the Lipset and Rokkan] terms did indeed at one time have powerful effects on party choice [...]. Moreover, few scholars fail to agree that cleavages defined in these terms declined in importance after the 1960s. In most countries, social cleavages appear to have explained around 30 per cent of the variance in party choice during the 1960s (sometimes much more) but in many of those same countries this had declined to around 10 per cent by the mid-1980s. (Franklin 2010, 651)

It is claimed that the de-structuring (or dealignment) caused by the generational replacement of the older voter cohorts who were politically socialized in the decades following World War II has led to the decline of ideological and class voting.

The consequences of the dealignment hypothesis were, on the one hand, that scholars started to focus on more short-term determinants of vote decisions and particularly to valenced

explanations of voter choice (Duch and Stevenson 2008; Lewis-Beck 1988). On the other hand, the spread of the idea that in the contemporary post-industrial world of advanced knowledge-based capitalism, the replacement of the older voter cohorts may have altered the traditional lines of political confrontation (Dalton 1984) rooted in the employer-owner/labourer-tenant divide. Thus, the hypothesis of a new value-based cleavage was advanced in the light of the new post-industrial world (Kriesi 1998, 2010; Kriesi et al. 2006). A new social division is hypothesized between globalisation's 'winners' and 'losers'. The winners are identified with mobile service providers, such as skilled-manual and intellectual non-replaceable workers, and particularly living in large metropolitan areas which make them assimilated in the globalized world. The losers are the unskilled, peripheral and replaceable manual workers.

It is suggested that a value-based cleavage has arisen along these new lines of social conflict, between those who support greater international integration and a broader definition of the welfare state (globalisation's winners) and those who support the protection arising from the national demarcation of economic relations and welfare. From the point of view of the demand-side of the party system, this translates into the emergence of a second dimension in the preferences of the electorate. Voters no longer perceive party differences exclusively in terms of the traditional pro-state/pro-market division, but also in terms of their support for binding international integration and its rules and institutions, or for breaking those rules in defence of national sovereignty.

Given the convincing argument of (Bartolini and Mair 1990) regarding the importance of the long-term, historical perspective to fully understand the institutionalization and stabilization of the class-cleavage, it should be clear that supporting evidence for the integration-demarcation cleavage hypothesis should not lead to conclude that traditional political alliances ended. What can be concluded with short-term survey data is not the long-term trajectory of party systems, but rather the contingent conjuncture: a local cleavage reconfiguration rather than a permanent change in the party system. This is not to say that such a short-term perspective is irrelevant. The democratic breakdown may occur in the short run. It was against the backdrop of the public's fear and anger that Nazi populist rhetoric, animated by a violent anti-Semitism, attacked both communism and capitalism as a threat to the nation. In our theoretical coordinates, this is a refusal of the (left-wing socialist

and right-wing capitalist) integration dynamics and the retreat into a logic of demarcation from supranational integration. In 1928 Hitler's party only received 2.6 per cent at the federal elections. Then, in 1929 the Great Depression unleashed the beast of populist resentment. The following year the National Socialist German Workers Party won 18.25 per cent of the popular vote (107 seats in the Reichstag) and in 1932 the Nazi Party leapt to over 37 per cent of the popular vote. In 1929 unemployment rate was at about 8.5 per cent and in three years rose to around 30 per cent. Overall, the industrial production dropped by about 40 per cent in the same period.

The implication is clearly not that democracy will automatically collapse once populists impose a new structure of electoral competition that supersedes traditional left-right politics. At the same time, short-term changes in the structure of electoral competition may be very destabilizing, due to the fact that such change leads two structures to collide. On the one hand, the old mainstream parties remain trapped in the class-cleavage, into progressive and conservative fronts. On the other hand, new political movements compete directly in terms of the new confrontational line. In this sense, they can exploit a structural advantage compared to traditional parties, which are basically playing a game no longer played in the mind of most voters: they should be allied, but remain divided in a structural condition of weakness, as far as voters' preferences remain sufficiently polarized on the new dimension.

A model of structural change in party system competition

As highlighted in the next chapter — on the meaning and number of latent dimensions of the political space — the new dimension has to be orthogonal to the old left-right class-cleavage in order to be identified. If the nationalistic-demarcation camp overlaps with the positions of traditional conservative parties, and the supporters of international integration overlap with progressive parties, we will not be able to identify the second dimension empirically, and this would not produce a restructuring of party systems. I argue that the second dimension is in fact cutting political actors *within* and not *across* ideological lines. To elaborate this intuition, I propose a reinterpretation of David Ricardo's classic production function equation, describing the relationship between the economic output and the input factors in a society. Ricardo followed the original interpretation of Adam Smith, who described the product as a function of three inputs: capital (K), labour (L) and land (N), as in his famous equation:

$$Y = f(K, L, N).$$

Ricardo's innovation was to incorporate the notion of decreasing marginal productivity. He considered that production generally increases at a decreasing pace, unless the decline in the marginal productivity is outweighed by innovation and technical progress. Therefore, he proposed the inclusion of technical expertise and know-how in the production function, thus:

$$Y = f(K, L, N, S).$$

Where: production (Y) is respectively a function of capital (K), labour (L), land and property resources (N), and of technical innovation and expertise (S). I argue that David Ricardo's production function is a compact and elegant way to express social conflicts in societies during economic recessions and recoveries. In fact, Ricardo's production factors can be classified according to two criteria: the stage of economic development (industrial vs. non-industrial), and factors' mobility (mobile/non-replaceable vs. non-mobile/replaceable).

I define a stage of 'physiological' political processes occurring in times of economic expansion or physiological short-term stagnation. In this stage the prevailing conflict in the production process is between labour and capital. These are the primary drivers of the industrial political conflict. In this context, N (land) and S (knowledge and technological innovation) can be considered ancillary production factors, and as such the owners of these two secondary factors can join in political coalitions with the two main production factors. For instance, small agricultural land-owners may join forces with the working class, whilst large property owners may be allied with capital owners. Similarly, socio-cultural intellectual workers may find an ally in labour, whilst managers may coalesce with capital. The physiological state of societal conflict works as far as the production cycle follows a long-term expansionary trend, with occasional stagnations and then recoveries.

In the case of prolonged recession, economic hardship could be so severe as to break traditional political coalitions. Prolonged economic hardship can also be the outcome of very high income inequality, which concentrates economic wealth, and leads to stagnating real household income for large societal groups. Another economic mechanism can be identified

with technical progress and automation, which lead to larger unemployment even if the economic output expands, further generating a 'skill-biased' distribution of wage. Economic recession, inequality, and automation interrupt the physiology of economic development, and bring us into a 'pathological' stage of political competition. Here the main economic conflict shifts from the opposition of capital to labour towards the clash of fixed and mobile production factors: between those who can escape the crisis and those who pay its cost. Landowners cannot relocate their activities in the same way as capital owners, and unskilled and semi-skilled manual workers cannot provide their service elsewhere as easily as skilled knowledge workers. Then, a new struggle can be triggered: the 'new politics' would oppose the mobile/non-replaceable factors (cultural and technological intellectual workers and big capital owners who can relocate) to non-mobile/replaceable ones (manual workers and small land and resources owners).

Prolonged economic hardship can thus induce two novel political alliances: highly innovative employees and employers on the one hand, and unskilled manual workers and immobile small owners on the other. Once the demands are shaped, new political parties can fill the gap and align accordingly. Anti-establishment populist parties arise and can become the political referents for L (labour) and N (land); at the same time, traditional mainstream progressive and conservative parties, agreeing in defence of an integrated supranational system, can become referents for the more innovative economic forces, K (capital owners being normally a constituency of the conservatives) and S (socio-cultural professionals normally supporting progressive parties). The key point is that the new dimension will be orthogonal to the old one: demarcationists do not map exclusively on the left or the right, and the same is true for integrationists. Instead, the new division operates across ideological lines, dividing more moderate pro-establishment political parties and radical anti-system parties.

Contesting Europe from both left and right

In the present configuration of the post-Great recession political conflict, the establishment in European countries is increasingly identified with the project of European integration. For instance, one can observe the trajectory of the Italian Lega Nord. The party, created in 1991 as a federation of various regionalist parties, can be considered consistently 'demarcationist'

throughout its history. However, the Lega initially articulated the demarcation as targeting 'the centralism of Rome', labelled as 'the big thief'. Therefore, the demarcation was initially, and for a long time, intended as the secession of the Northern regions from the Italian state. However, after the Maastricht Treaty, the introduction of the Euro, and particularly after the outbreak of the Euro-crisis, the level of the demarcation has shifted from the national to the supranational institutions, and today the target of the Lega Nord is in Brussels and not Rome. Europe as an institutional arrangement is criticized both from the right and from the left. From the ideological right, Europe is contested because it represents a cosmopolitan project where the freedom of movement of the workers is a foundational aspect. This pillar of the European project threatens the traditional definition of the community on a national basis, and exposes unskilled workers to the competition of immigration flows. From the ideological left, Europe is contested because it represents a neoliberal project, where the freedom of movement of capital is a cornerstone. This second pillar of the European project threatens equality and shrinks the fiscal base that is required to support the welfare state. It also allows large firms to relocate in countries with a cheaper workforce and this in turn is perceived to increase unemployment. In this state of things, centre-left parties such as the socialists would be willing to trade larger freedom of capital and looser control of capital flows in exchange for larger freedom of movements of workers; moderate conservatives would be willing to trade looser controls of migration flows for more neoliberal policies. This also contributes to the orthogonality of the second dimension, as the supporters of greater integration will be moderate parties on both the left and the right, while the supporters of demarcation will be the radical left (anti-austerity) and radical right (anti-immigrants) parties.

Contesting Europe from North and South

Finally, this theoretical setup may help shed light on the differences between Northern European and Mediterranean European countries. In fact, while I argued in favour of the existence of a substantial orthogonality and independence of the new dimension with respect to the old class-based left-right division, I do not claim that this orthogonality is perfect or evenly distributed across countries. Although this will not be the focus in this dissertation, the model can take on the differences between the Northern European and the Southern European varieties of capitalism (Hall 2014). On the one hand, Northern European

coordinated market economies are basically characterized by an export-led growth model, a high-salary workforce supported by an integrated system of vocational training, and on continuous innovation and improvement of the production system. By contrast, Southern European mixed economies are characterized by a demand-led growth model, lower wages and limited skill training of the workforce, and a rather slow pace of innovation. Under such conditions, Northern European firms become particularly dependent on highly-skilled workers. This reduces their incentive to relocate to developing Eastern European countries to achieve cheaper, but less skilled, workers. At the same time, Northern European countries become particularly attractive for migrant workers from the East and South, given the relatively high wages and living conditions. On the other hand, Southern European firms have a greater incentive to relocate in order to exploit the competitive advantage and cost reductions of a cheaper workforce, since they do not need highly-skilled workers. This, in turn, increases the unemployment rate in Mediterranean countries, particularly for the younger and more unprotected social groups, thanks to dualized welfare systems and to the fact that they are too highly skilled for the low salaries they receive.

The previous point makes it clearer how the salient problem of the North may become that of reducing competition in the domestic workforce and the incoming flows of migrant workers, while in Mediterranean countries the primary issue is to limit the relocation of domestic firms. In Northern Europe, the demand to alleviate the competition of migrant workers fits the programmes, policies and arguments of right-wing nationalists, willing to block further inflows of migrants. The political coalition thus aligns the economic incentives of the non-mobile factors (i.e. the losers), Northern European manual workers whose salaries are likely to shrink as a result of incoming migration, and the 'old right', the cultural opponents of immigrants who feel threatened by cosmopolitanism and 'Islamisation' of traditional communities. By contrast, in Mediterranean countries the main issue perceived is related to stagnation, unemployment and the de-industrialization that followed the relocation of large firms. Against this backdrop, voters' demands tend to criticize the freedom of capital rather than the freedom of movement (here basically an opportunity for young unemployed workers). Therefore, the political actors opposing more integration, and thus referring to the new dimension, have found it easier to create a new political coalition with the political actors of the 'old left'.

In conclusion, populist anti-establishment parties in coordinated Northern European economies are more likely to spring from a new political alliance between the 'new' anti-immigration working class and the 'old' identity-based right-wing nationalists; while in the Southern European countries/Mediterranean mixed demand-led economies are more likely to arise from the alliance of 'new' anti-austerity movements and 'old' left-wing anti-capitalists.

2.3.2 Goodbye Lenin? An empirical model of electoral competition

In the light of the discussion developed in the previous section, we are now eager to test whether the structure of European electoral competition still occurs along the lines of the traditional left-right class-cleavage, or whether it has evolved into a new line of confrontation between those who accept the additional burden of rules and embedded institutional constraints implied by supranational integration, in the European context identifiable as the supporters of further European integration, and those who propose a retreat from international integration in favour of national demarcation. In Europe, the former are identified as the supporters of further EU integration, the latter with the Eurosceptic front. An empirical test for the structure of competition in European party systems must be based on three key elements: 1) the availability to change political front on the demand-side; 2) the differentiability of policy options on the supply-side; and 3) the existence of a negative relationship between more differentiated policy options and voters' electoral availability. I will discuss these together with related problems, before presenting a coherent empirical design.

The concept of electoral competition

My empirical design is based on the conceptual analysis elaborated in Bartolini (2002), which investigates the theoretical conditions that activate a Downsian electoral competition:

In this case the unintended social value of competition is explicitly defined as 'responsiveness'. One does not need to assume that candidates and parties want to respond to voters' preferences—they are involuntarily forced to do so while pursuing their goals of power through maximizing the necessary vote. Thus competition obliges elites to take into account the preferences of the voters. (Bartolini 2002, 87)

Bartolini identifies four necessary conditions for responsive electoral competition: contestability, vulnerability, availability and decidability. I will briefly discuss the four before converting these concepts into a feasible empirical design. But first, I should point out that competition is a narrower concept than democracy, in the sense that democracy may coexist with the absence of competitive elections. There could be democracy without effective electoral competition. In particular, this may occur both due to contextual conditions on the demand-side and the supply-side. On the demand-side, voters may develop a strong sense of identification that prevents them from potentially redirecting their political support and their vote. On the supply-side, parties may decide not to compete by converging on similar policy positions. This can help locating the wider coordinates of this analysis.

The first condition listed by Bartolini, *contestability*, refers to the existence of a set of preconditions enabling political pluralism, including rules — such as electoral laws, institutions, open parties and elections, the absence of entry barriers, and public visibility among others — that would ensure the permanence of a minimal number of relevant political actors that open elections up to contestation. In terms of the previous consideration this is a necessary, but not sufficient, condition for electoral competition. The second condition, *electoral vulnerability*, is the system property that makes the incumbent government, together with the governing political parties, potentially punishable by the voters. There has to be a minimal visibility of the behaviour of the incumbent so that the voters are able to judge once at the ballot box. *Electoral availability* refers to the existence of a subset of the electorate that is available to potentially change its vote preference. Perfect availability would correspond to a perfectly elastic Downsian electorate, while no availability would consist of total and immutable partisan identification:

Strong psychological identification, resulting from organizational encapsulation, cultural bonds, and the like may anchor most voters, and make them unavailable for voting switches. Thus, the actual level of electoral availability in each given election or country is an empirical question which is of crucial importance the study of electoral competition.

(Bartolini 2002, 93)

Voter availability is also connected to the extent of electoral cohesion of the social constituencies within the electorate: “It is not just the *supply* of partisan policy-making that determines whether parties make a difference. It is also a matter of what is *demand*ed at the

electoral level.” (Mair 2008, 219). Finally, the concept of *decidability* refers to competition from parties: political parties have to be willing to compete by presenting policy packages and party images that are sufficiently differentiated to be visibly different before voters: “Policy or issue-position differentiation among parties and visibility and clarity of these differences for the voter are what I call decidability.” (Bartolini 2002, 95).

Having pinpointed the conditions for a responsive electoral competition, we can try to convert the concepts into empirical indicators. Before proceeding with the details of the operationalization, I will turn off the spotlight on contestability and electoral vulnerability and assume that elections are generally minimally contestable and that governments are generally minimally punishable in the contemporary European context. In the first place, no European country has entry barriers to the political arena that would lead us to think of the polity as non-contestable. The fact that in every European country there are two or more political parties running at every election accounts for this. Second, since 1926, when it has been observed a “[...] positive correlation of 0.449, suggesting some relationship between business prosperity and the state of mind in the electorate which results in the re-election of experienced congressional incumbents” (Rice 1926), and for the following ninety years, an solid corpus of empirical research has shown beyond any reasonable doubt voters’ ability to reward or punish incumbent political parties with retrospective sanctioning tools: voters can examine the declared and desirable goals of government activity and compare where the country is now and where it used to be (Campbell, Converse, Miller and Stokes 1960, Ch. 14; Duch and Stevenson 2008; Fiorina 1981; Key 1966; Kramer 1971; Lewis-Beck 1988). Therefore, in what follows I will focus on the only two ingredients for responsive electoral competition that could be reasonably lacking in contemporary Europe: voters’ electoral availability on the demand-side, and the offer differentiation or decidability on the supply-side.

Empirical hypotheses

At this point we have to pass from Bartolini’s theoretical construction to the concreteness of European electoral competition, bringing together structure, content, framework in an overall picture. In other words, the structural element of competition has to be in practice operationally, it should be actively shaping party positions and voters’ potential choices.

Therefore, the elements of electoral availability and decidability separately considered are not enough to tell us the specific *locus* where competition is actively taking place, the operating political arena. To this end, the extent of decidability has to constrain the susceptibility of voters to the electoral change.

We can develop this previous intuition through a marketing analogy: if a product is genuinely important to consumers, then two very different versions of the product offered by two firms should lead consumers to strongly prefer one version over the other. Consumers cannot remain indifferent if the product is important and if the two versions are perceived as different. If two different versions of the same product, or — better — two products of the same class, leave the consumer indifferent, then either they do not perceive the difference, or the product is not really important for them. In a similar way, we would expect that larger decidability on the side of political parties would lead to smaller availability on the voters' side. In the words of applied political research, we would expect more extreme candidates and greater political polarization to be the associated with lower electoral volatility and a smaller share of swing voters.

If the parties are offering different policy package, and if the underlying dimension on which they compete is relevant, then voters should be less available to switch sides. We can now formulate the following general hypothesis on the structure of electoral competition:

H11 – Structure of competition: *larger party system polarization should be negatively associated with the between-block electoral availability of the voters, if the underlying dimension of competition is perceived as important by the voters.*

The expression *between-block* is based on the argument regarding the importance of distinguishing between total and block-specific availability (Bartolini and Mair 1990):

A cleavage is a dividing line between two groups. [...] The stronger the hold of a cleavage, the more difficulty individual voters will experience in crossing the boundary, and hence the lower will be the level of block volatility. This, in turn, justifies our isolation of that part of the general electoral mobility which occurs *across* the cleavage from that which occurs *within* any cleavage block of parties, this distinction being identified through the index of block volatility. (Bartolini and Mair 1990, 45–46)

Nevertheless, the previous hypothesis basically represents a ‘detection tool’ and, as with any other detection tool, we must know the direction to point it in. Thus, we can rely on the discussion in the previous section on the physiological and pathological stages of electoral competition, and use the framework to delineate two different *loci* where the structure of electoral competition may be operating, and then spell out two non-mutually exclusive, testable empirical hypotheses.

The first *locus* of competition is the traditional class-cleavage and the left-right continuum. If European electoral competition is taking place along this traditional dividing line, then we should take into account the class-cleavage blocks studied in Bartolini and Mair (1990): a *left block* consisting of traditionally progressive political actors that includes traditional social-democrat, socialist, communist parties and political movements, together with the libertarian movements and parties of the ‘new left’, such as ecologists and left-libertarians (Kitschelt 1988); and a *non-left block* that includes traditional Christian Democratic, Conservative, Liberal Conservative and nationalist political parties and movements, movements and parties of the new right, including right-wing populist parties, the New Radical Right and neo-fascist movements (Kitschelt and McGann 1997).

We can thus expect the distance of party positions on the traditional left-right cleavage to affect the availability of voters’ to potentially switch electoral block. A synthetic index capturing the differentiation of positions in the party system is the Dalton index of party system ideological polarization (Dalton 2008).⁹ We can thus condense the idea that electoral competition takes place on the traditional left-right cleavage in the form of a testable hypothesis:

H12 – Traditional left-right electoral competition: *party system ideological polarization is negatively correlated with voters’ availability to switch the vote between the left and non-left block.*

⁹ This represents the ‘quality’ of competition as opposed to the ‘quantity’, represented by the effective number of parties. I provide greater detail in the empirical chapters that follow.

The second potential *locus* of electoral competition in Europe could be the new integration-demarcation dimension, represented by support/opposition for the binding rules implied by the European integration project: “In short, by integration issue we may mean a general and a specific orientation to the EU, specific constitutive issues concerning the nature of the polity, and even more specific isomorphic issues defining the nature of the policies.” (Bartolini 2005, 310).

If this is the main arena where electoral competition is currently operating, then we should find a confrontational line between two blocks of political parties and movements opposing each other on these terms. As I have explained, the integration-demarcation divide is mostly, although not perfectly, orthogonal to the left-right dimension. I thus consider this dividing line between two different blocks of political parties: a *mainstream block* and an *anti-establishment block*. The first block includes the political forces that do not reject the establishment, defined in its broad interpretation: it is the Western postwar geopolitical status quo represented by an U.S.-friendly European continent moving on a path towards ‘ever stronger’ integration, which implies: 1) the compression of national sovereignty, 2) the removal of national boundaries, 3) an increasingly multicultural society; and 4) an increasingly globalized and neoliberal economic system.¹⁰ The mainstream block is the defender of the liberal principle of representative democracy, in that it acknowledges and legitimizes the delegation of power from citizens to a class of democratically elected political leaders, subject to the checks and balances of an equilibrated separation of powers, and grounding their power on a legal-rational form of authority. Mainstream political parties are those which are willing to accept the constraints of existing international rules on national sovereignty. They act responsibly towards supranational institutions in an attempt to achieve durable peace and cooperation in the form of stronger economic and political integration. Guided by this broad definition of pro-establishment mainstream forces, we can include all the main party families created in the aftermath of World War II that have

¹⁰ The hegemonic neoliberal, if not ordoliberal, character of European integration and more broadly of the Washington consensus can be appreciated considering the tension towards a growing role of the private sector favoured by the reductions in public spending produced by fiscal austerity and welfare retrenchment. In a nutshell, the neoliberal character of current international economic agreements can be reduced to the financial deregulations that make the tax base of capital extremely elastic while letting the tax base of labour remain rigid, thus creating the economic incentive to tax labour more than capital.

generally not refused the responsibility of governing in their countries: socialists, social-democrats, Christian-democrats, liberal, and conservative parties.

On the other side of the divide, I define a *challenger block* of anti-establishment parties and movements withstanding the expanding power of supranational entities, seen as supported by domestic 'corrupt' political elites. These are often, although not necessarily, radical — in ideological and expressive terms — political parties and movements characterized by the populist narrative, in which the target may vary depending on their ideological connotation: as previously explained, left-wing populists oppose the European project because of its neoliberal character, and often attack big capital and mainstream socialist parties as the betrayers of the principle of equality. On the other side, right-wing populists oppose Europe because of its multinational and multicultural nature, and attack traditional conservatives and Christian Democrats for having blurred the national boundaries of the Congress of Vienna, and for contributing to 'uncontrolled' immigration and welfare abuses (Bale 2003; Kallis 2013; Minkenberg 2013). Finally, post-ideological or ideologically moderate populists (e.g. the Italian Movimento Cinque Stelle) are not normally guided by general principles in the indication of the corrupt elite, but simply pretend to be the guardians of democracy, vaguely intended as a direct interpretation of the will of the people. In stark contrast with old anti-system political forces, the new anti-establishment actors can criticize representative democracy for being 'not democratic enough', rather than being 'too democratic'. Yet they tend to ground their authority on charismatic leaderships rather than on a legal-rational basis.

We can thus expect European electoral competition to be structured along the mainstream-challenger divide. If this is the case, political parties and movements would differentiate their product more with reference to support of or opposition to international integration, represented in Europe by the project of European integration. Therefore, if politics is played in these terms, I expect the new integration-demarcation cleavage, and particularly its main manifestation in terms of support/opposition for European integration, to differentiate parties. We can thus apply the same Dalton index on the political parties' positions in terms of support/opposition towards the EU to produce a falsifiable hypothesis:

H13 – New integration-demarcation electoral competition: *party system polarization in terms of support/opposition for European integration is negatively correlated with voters' availability to switch the vote between the mainstream and the anti-establishment block.*

Hypotheses H11–H13 and the nature of democracy

Hypotheses H11–H13 provide a compact set of empirically falsifiable predictions that potentially allow us to understand whether the current electoral competition can be described as Downsian and responsive, or whether the absence of interdependence between the differentiability of the product on the supply-side, and the availability on the demand-side translates into a type of competition that is closer to a Schumpeterian 'leadership-selection' functioning. In the first case, the unintended social value of electoral democracy would be government responsiveness. In the second case government is simply approved by the people:

In his text there is plenty of evidence to demonstrate Schumpeter's mistrust of any substantive link between what people want and what elites offer in exchange. In Downs, on the contrary, the concept of 'responsiveness' to voter preferences becomes the essence of the unintended social value of electoral competition. [...] Schumpeter emphasizes the periodic submission of elites to an otherwise unspecified voter judgement. Downs stresses the capacity of elites to respond readily and sympathetically to demands. Thus government 'approved by' the people (Schumpeter) it is not the same thing as government 'responsive to' the people (Downs). (Bartolini 2002, 88)

If the electoral competition follows a Downsian rather than a Schumpeterian dynamic, we would expect to meet Bartolini's requirements, and to observe a negative association between the differentiability of party positions and voter propensity to switch between political blocks. On the contrary, if electoral competition is only functional to the selection and approval of the elites, party positions should be irrelevant as political parties would have their electoral support secured irrespectively of what they deliver. Following this logic, a 'Schumpeterian democracy' appears to be compatible with the empirical falsification of hypothesis H11 (structure of competition), and thus of *both* H12 (traditional left-right competition) *and* H13 (new integration-demarcation competition). Yet if the empirical test

does not disconfirm *either* H12 *or* H13, this would indirectly also not disconfirm H11, then we could infer that the mechanisms of electoral competition in Europe are indeed more compatible with a form of responsive 'Downsian democracy'.

The three hypotheses are tightly related: H11 states that electoral competition has indeed a meaningful structure, but does not substantiate the presence of the structure with a reference to the specific policy content. In the purely structural sense, H11 would be falsified if no structure is found, thus if neither H12 nor H13 are supported in the data. This leaves us with two potential conclusions. First, we may conclude that European electoral competition is Schumpeterian. Second, we may not be detecting the structure because we are looking in the wrong place, and the main content of European electoral democracy would not involve neither ideology, or European integration. I consider the latter option purely speculative and tend to the former interpretation. Differently, finding empirical support for *either* H12 *or* H13, would mean that European party systems are likely to deliver responsively. Then, depending on whether H12 or H13 result falsified, we would obtain indications regarding the main *locus* of (responsive) electoral competition in contemporary European party systems. Hypotheses H12 and H13 are not mutually exclusive in principle, but they are likely to be in practice. This is a matter of degree rather than of qualitative difference. We may all agree that both dimensions are salient, but we may disagree on which one specifically is the most salient. It is possible that: 1) a number of voters are available to switch between the left and the non-left block while a second comparable number is more available to switch between the mainstream and the challenger's block; and 2) the policy packages offered by the political parties are simultaneously differentiated on both dimensions. If this is the case, we should observe that both H12 and H13 are empirically supported. This is an advantage of this design, in that we do not rule out this possibility, which I return to in the final chapter.

The closing section to this chapter outlines the link between three subsets of hypotheses: the first subset (H1–H8) involves the study of latent lateral and scale misperceptions by the voters; the second (H9–H10) deals with the systematic measurement error affecting party positions and, in turn, standard polarization indices. Finally, the last subset (H11–H13) investigates the structure of European electoral competition.

2.4 The confounding effect of perceptual biases on electoral competition

The dissertation unfolds as a two-sided story. On the one hand, there is the methodological inquiry of voters' perceptions. On the other, the substantive scrutiny of how European party systems function. The third subset of hypotheses (H9, H10) represents the link between the methodological and the substantive contribution. To recap, H9 states that idiosyncratic scale distortions (or Differential Item Functioning, DIF) may produce systematic measurement error in the standard polarization indices. Hypothesis H10 states that party positions from the 2S-BAM model presented in Chapter 4 are not contaminated by the systematic measurement error stemming from perceptual bias.

If the empirical data support both hypotheses, then the result can be read as a signal to prefer DIF-corrected ideal points over error-inflated standard measures. This is crucial in understanding the potential confounding effect: without a scaling model that explicitly estimates the amount of distortion for each voter, thus allowing us to map all the latent perceptions on the same scale, the polarization indices cannot distinguish between objective party positions and subjective perceptions. Standard measures would thus conflate the true value of polarization, arising from objective party positions, and the idiosyncratic errors arising from the subjectivity of scales' perception. The indices I propose, however, are built to explicitly separate the two effects, and thus allow us to remove the subjective perceptions and to isolate the component of objective policy positions.

Nevertheless, latent distortions of voter perception may be largely country-specific and uncorrelated with polarization. If this is the case, we would reject hypothesis H9 and the practical consequence would be that we can safely accept existing inferences that involve indices of political polarization from perceptual data. However, if the perceptual distortions of voters are systematically correlated with polarization, then we should be aware that our previous conclusions could be due to measurement error rather to the effect of polarization. This section concludes the theoretical framework. The next chapter introduces the empirical setting tackling the problem of identifying the latent dimensions in the political space.

Chapter 3 — Ideology, polarization, and the problem of latent dimensions

*“Equality,” I spoke the word
As if a wedding vow
Ah, but I was so much older then
I’m younger than that now*

Bob Dylan (1964). My Back Pages.

3.1 Introduction

Having outlined the theoretical framework and having specified the empirical hypotheses we can move on to the next step of setting up the empirical model. The first task is to define the most problematic independent variable in the model: political polarization, and this chapter provides a detailed account of the problems behind this measure and the justifications for the solutions chosen in this thesis. Section 3.2 examines the conceptual and operational definitions of political polarization and concludes that in the context defined by the theory on the restructuring of electoral competition in Europe, presented in the previous chapter, the measure of polarization interpreted as the dispersion of latent positions is preferred. Then, I abstract from the notion of a bi-dimensional European political space, and define the number and content of latent dimensions from an agnostic standpoint. Section 3.3 thus details the two alternative approaches to this problem, before re-analysing the key problems of low-dimensionality, and the possibility of positional projections in the light of the relevant literature. I argue that bi-dimensionality can be seen as a natural outcome of the unfolding of the left-right in a context of high ideological polarization, where the distance between ideological moderates and ideological extremes is sufficient to become an independent dimension of competition. The second part of the chapter returns to the key themes of the

dissertation, dealing with the problem of direct incomparability (Sections 3.4–3.7). In the remainder of this introduction I present the main ingredients required to measure polarization in party systems.

An important preliminary clarification is that, whatever the source of political conflict, the primary consequence of a polarization process is a convergence dynamic within political blocks, and a divergent dynamic between them. The first aspect has consequences in terms of increasing the intensity of support for the political parties within the voters' electoral block. This implies that one manifestation of growing political polarization is normally an increase in the share of partisans in the electorate (Lupu 2015)¹¹. The willingness to declare one's political sympathies is also accompanied by an increase in the weight of partisanship on the vote (Bartels 2000). In a polarized political environment, smaller shares of partisans are willing to express disagreement with the party they claim to support, and this process clusters the political arenas, shrinking the centre and leading to the creation of the two (or more) poles. The second consequence is increasing the distrust of and the disapproval for the other political block. Recent evidence from the United States (Pew 2014) shows how in a scenario of growing polarization, individual voters become more convinced of their own opinions, and more firmly sure that different ideas are problematic, wrong or even dangerous. The political discussion can become endangered by reciprocal mistrust, in places of social aggregation and most importantly in the media.

The concept of polarization refers inherently to a distribution of political actors, such as voters and political parties. Therefore, we can distinguish measures of polarization among the elites from the measure of mass polarization. The first category includes party system polarization, measuring the political polarization of political parties, and polarization in legislatures, that can be developed analysing the distribution of the policy positions of national MPs. Mass polarization refers to the distribution of voters' positions. Given the relatively small number of political parties in a party system, the level of party polarization can be measured with a synthetic index, generally in the form of a weighted dispersion of party positions around the average position in the party system. In the case of polarization

¹¹ Polarization is far from being the only driver of partisanship levels and trends. For excellent analyses of the socio-structural determinants of partisanship refer to (Crewe, Sarlvik and Alt 1977; Dalton 1984; Dalton and Wattenberg 2002).

of the electorate, the weight of the position of a single voter on the whole electorate is negligible, although it contributes to the shape of the overall distribution of policy positions. Moreover, different subgroups of the electorate can help polarize or moderate the overall distribution of policy preferences in the electorate. For instance, relatively high values of polarization are associated with a larger share of partisan voters in the United States (Lupu 2014). However, partisanship and polarization are not two faces of the same phenomena, and high shares of partisans in the electorate may coexist with low levels of polarization if political parties are sufficiently legitimized and successful in mobilizing moderates and independents.

Having listed some of the main elements in measuring polarization, we can go on to examine more detailed considerations.

3.2 Four elements for a conceptual definition of polarization

Polarization can be loosely defined as the distance between influential political positions. This rough definition indicates the four basic conceptual attributes of polarization: the element of the number of political actors to be considered, together with their practical relevance, the need for an underlying distance measure, and finally the positional character of that measure. In the remainder of this section I discuss these four elements and then pinpoint the linkages between the requirement of a positional measure and the theory of spatial voting.

First, polarization consists of distances. The farther apart the political actors, the larger the political polarization. Yet, this requires some additional clarification: how many, and which political actors should be chosen?

The simplest option is to measure the distance between only two political actors (Abedi 2002; Indridason 2011; Kitschelt and McGann 1997). Excluding the case of a perfect two-party system, this perspective immediately leads to the problem of which two political actors should be chosen. The distance measure can refer to the two most extreme parties as a measure of the overall ideological distance in party systems, or can refer to the two main establishment parties, thus capturing only the ideological diversity of parties with government potential. For instance, one option would be to select the two most extreme non-

marginal political parties (with a discretionary electoral threshold such as 5 or 10 per cent of the popular vote), and then measure the policy distance between the two most radical political parties. We keep this option as a possible measure of party system polarization. Is the consideration of two political actors enough to produce a satisfying portrait of party systems? This clearly depends on the positions of the remaining political actors. If the other political parties are evenly spread between the two already considered, then this measure can be satisfactory. Alternatively, there can be a scenario where all the remaining political parties (except one) cluster slightly on the interior of one of the two extreme parties. In this potential setting, the extreme party close to the other parties is only 'extreme' in the sense that it happens to be the outermost. In fact, the only extreme party is the only one standing on the opposite side, because it would be the only party isolated from all the remaining parties. If we do not consider the size of the extreme party, this second scenario could correspond to a case of low polarization. Consequently, our simplest case should be expanded to accommodate such alternative scenarios. This can be accounted considering the positions of the remaining parties, for instance, computing the distances between all the political actors. This would be the only option, if the measure being studied is not positional (such as an intensity of feelings). In the case of positional measures, however, the task can be simplified by taking into account the whole distribution of positions. The analysis of distributions is in fact the only option for studying legislators' and mass polarization due to the high number of units (respectively MPs and voters). Yet, in the last instance the idea of polarization leads to a notion of distance, and distance can also be considered in the analysis of distributions, e.g. computing distance between percentiles in a unimodal distribution, or between the modes of bimodal distribution.

Second, the political units must be influential, particularly in the case of party system polarization. In fact, a criterion is required to establish which political units should be counted and which should not and, in the first case, to what extent. For instance, political movements without parliamentary representation can be more extreme than those represented, but since they do not participate in the legislative process, they are normally excluded from the analysis. Yet, in some cases this may be unwise. For instance, the United Kingdom Independence Party won only one seat in the British House of Commons at the 2015 general elections, but its exclusion would be misleading given the political relevance of the

movement in British and European politics. In the case of legislators and voters' polarization this choice is generally less problematic because all MPs and voters have the same unitary political weight.

Third, polarization indices have to be computed with respect to a politically relevant underlying measure. If a political issue is salient it is likely that the political views on that issue conflict. This means that either policy positions diverge, or — in case of valence issues — that parties claim superior ability and credibility. In this sense, valence competition should be associated with affective (i.e. non-positional) rather than ideological polarization. Even so, excluding other sources of resentment such as ethnic conflict, it seems unlikely that affective polarization may persist in the absence of a source of political disagreement.

Finally, the operational definition of polarization requires that we identify the positions of political actors, i.e. it should be a positional measure. The analyst needs to know where parties, voters, or legislators stand. This is not strictly necessary for producing a polarization index. For instance, positions are not required if we define polarization as the intensity of feelings for various political groups. Yet, intensity of feelings should be seen as a prerequisite or a signal, and not as the main construct of interest. When voters express intense support for one political actor and intense opposition for another, then all we know is that there must be some open line of ongoing confrontation within the party system. While this may be interesting, it would be even more interesting to know *where*, rather than *whether*, the political conflict operates.

The theoretical background of positional measures

The positional representation fits with the theoretical perspective of spatial voting (Enelow and Hinich 1984). The idea of positioning voters and parties on a policy space is based on two main elements: the assumption of rationality; and the assumption of self-interest. Voters realize they have an interest in the election outcome and vote according to their self-interest. The positional representation means that voters are able to create a spatial projection of their most preferred policy package, their *ideal point* (Enelow and Hinich 1984, 10), together with the spatial representation of political parties' policy packages (political parties' ideal points). Then, voters opt for the 'closest' political parties, minimizing the distances between their

preferred policy options and those of supported political parties. In a similar way, political parties are assumed to act rationally in competing with the goal of electoral success.

In the Downsian formulation of spatial voting, parties select their position *after having observed* the distribution of voters (Downs 1957, 118). Yet, even for catch-all parties this mechanism may appear too simplistic. Parties have their own histories and most of the time cannot credibly commit to significant changes in their policy package. Therefore, a more convincing reformulation of parties' behaviour is to consider party ideologies as fixed, and the election's result as shaped by the *perceived* median position (Enelow and Hinich 1984, 46): electoral competition can be understood as the *candidates' attempt to strategically manipulate voter perceptions*.

Consider the following example: a hypothetical median voter's most preferred policy package is keeping social expenditure at its current level. The median voter also believes that the conservative candidate would cut social expenditure by 40 per cent. Then, one potential strategy for the conservative candidate could be to try to shift the median offer, e.g. claiming that the progressive candidate would also cut social expenditure, or to try to convince the median voter that cuts in social welfare would be smaller than generally assumed. If the median voters' position on a second issue is closer to the same conservative candidate, an alternative strategy would be to strategically downplay the importance of welfare and emphasize the second issue. All these tactics are likely to sound familiar to close observers of electoral campaigns.

The effectiveness of this strategically-induced voters' misperceptions can actually shape election outcomes:

The point of the discussion is not to suggest that candidates can alter voter perceptions in any manner they choose. Voter perceptions cannot be changed that easily. Rather we wish to suggest certain tactics that candidates may use in an *effort* to change voter perceptions. Whether or not these tactics succeed will, of course, determine the outcome of the campaign. (Enelow and Hinich 1984, 48)

It is thus clearer the linkages between the scaling model sketched out in the previous chapter (and dealt with in detail in the next one) and the spatial voting theoretical frame. If I have only focused on individual explanations to account for perceptual distortions (H1–H8), an

alternative line of research might examine which campaign tactics are most successful in shifting voter perceptions.

Additional observations

Having discussed the elements of a conceptual definition of polarization, conceived as the distance between influential political positions, we must now observe how this definition excludes a number of elements normally connected with the idea of polarization, also indirectly.

In the first place, referring to *distance* rather than to *growing distance* we are implicitly focusing on what DiMaggio, Evans and Bryson (1996) indicate with 'polarization as a state' rather than 'polarization as a process'. Polarization can be both. The main reason why I define polarization as levels rather than changes is methodological and derives from the very idea of ideology as a latent concept: unless we have a longitudinal source of anchoring information, we should not compare directly over time. To measure polarization appropriately over time is thus necessary in order to track issue responses in the long term, even if issues are not salient at that specific time, in order to ensure longitudinal comparability of ideology scores.

A reasonably large subset of issues would be sufficient, but a data source with voters and party placement on common issues for all EU countries is not currently available. The only potential option is the pan-European Voting Advice Applications (Trechsel 2010; Trechsel, Garzia and De Sio 2014). Yet, this data is only available since 2009. Furthermore, VAAs normally offer highly self-selected samples of young, progressive and politically-aware voters. Party-level data cannot thus be matched with a pool of representative voters. One solution would be to harmonize the VAA research groups with national election surveys to include a common set of issue items. In the meantime, the preferred choice is to focus on level polarization, so as to optimise the available resources. The dynamics of polarization can be better appreciated in a case study or narrower comparisons.

3.2.1 One concept, three measurement approaches

Our conceptual definition of polarization can now be used to select a measure. A review of the literature leads us to identify three potential operational definitions of political polarization, depending on the underlying measure: 1) polarization as issue alignment; 2) polarization as intensity feelings towards political parties (affective polarization); and 3) polarization as weighted distance of ideological positions (ideological polarization). I argue that the last option is preferable given our theoretical focus on the party system polarization and the large comparative setting. Before going into detail, I review these three potential operationalizations.

The first operational definition refers to political polarization as an alignment among political issues: the more informative a single-issue position becomes in terms of positions on other issues, the larger the level of polarization interpreted as issue constraint (Baldassarri and Gelman 2008; DiMaggio, Evans and Bryson 1996). This operationalization is linked with the idea of coherent belief system: “We define a *belief system* as a configuration of ideas and attitudes in which the elements are bound together by some form of constraint or functional interdependence.” (Converse 1964, 3). As we will observe later in this chapter, a latent dimension can be seen as an overarching position on multiple specific issues which are interconnected. DiMaggio *et al.* (1996) separates issue constraint from (social) consolidation of issue attitudes, where the latter refers to the parallelism between attitudes and social groups. Their measure of polarization, based on NES data,¹² is the Cronbach’s alpha¹³ among a number of feeling thermometers towards social groups (blacks, poor people, liberals and conservatives), together with three attitude items on minority groups, gender equality, and pro- or anti-abortion. Consequently, this measure may also be viewed as affective (as it also relies on intensity of feelings), and contains some elements of ideological polarization (since the intensity of feelings about conservatives and liberals are correlated with respondents’ ideological leaning). The same idea of polarization as correlation has been proposed in (Baldassarri and Gelman 2008), who focus on correlations among attitude items.

¹² They also build a second measure based on data from the General Social Survey (GSS) that contains only political issues arranged in six issue dimensions, including: abortion, racism, women participation in politics, women’s role in the family, sexuality and law-and-order.

¹³ Cronbach’s alpha is normally used in measurement literature as an indicator of reliability of a certain measure, but their implementation can be understood as a coefficient of multivariate correlation.

Nevertheless, the idea of issue constraint does not necessarily need to be associated with reported attitudes in surveys. Constraint can also be seen in the voting records of legislators. Poole and Rosenthal (1997) exploit issue constraint in the form of a correlation among roll-call votes in Congress to produce an estimate of legislators' latent ideology score and to document the increase of polarization in the U.S. Congress.

The second operational definition of polarization is affective. This refers to a recent strand of literature (Iyengar, Sood and Lelkes 2012; Iyengar and Westwood 2015; Rogowski and Sutherland 2015a) investigating political polarization from the perspective of social identity theory, and that has produced indicators based on the idea of 'social distance', measuring to what extent groups of party identifiers dislike each other. The most basic measure of affective polarization consists of thermometer ratings where respondents rate political parties (e.g. the 'Democratic Party') or partisan groups ('Democrats'), although survey measures may also include, for example, feelings about inter-party marriage (i.e. "Would you let your daughter marry a Republican/Democrat?"), and lists of stereotypes to describe traits of specific party supporters (Iyengar, Sood and Lelkes 2012). Various explanations have been offered for affective polarization. Iyengar, Sood and Lelkes employ a variety of survey data sources from the U.K. and the U.S. and suggests that affective polarization is not necessarily related to ideological polarization, but find a stronger association with the negativity of political campaigns. Rogowski and Sutherland (2015b) provide evidence based on a survey experiment with a sample of U.S. citizens to show that increased ideological polarization produces greater affective polarization. To the best of my knowledge, no study to date has analysed the association between affective and ideological polarization in the European context. One problem with this conceptualization of polarization is its potential independence from ideology and policy positions. One can easily think of non-policy factors such as the perceived level of corruption. Furthermore, ethnic parties can also be intensely disliked in Eastern Europe. While ideological polarization may represent a general explanation, other factors may reflect the internal political context, and other specific reasons for inter-group resentment.

Finally, the last potential operationalization of political polarization refers to the polarization of ideological positions. In comparison with the first operationalization, the emphasis here is placed on the distance between positions of voters and parties, rather than on the correlation

among multiple issues. These two aspects may be associated, because we reasonably expect issues to be more aligned in a context of high ideological polarization, but they have to be distinguished. In fact, in the hypothetical situation mentioned in (DiMaggio, Evans and Bryson 1996), where individuals answer issue items randomly, but only selecting the two most extreme responses, the first operationalization would lead to very low issue constraint, but the third would lead to extreme polarization. This is one reason to prefer a deductive dimension (e.g. left-right ideology) instead of inductively consider single issues. Furthermore, the internal logic of the two measures is rather different: the first definition (polarization as issue alignment) produces empirical scores of internal constrain among attitude scales, whereas polarization as distance among ideological positions normally assumes a minimal level of issue constraint to produce a synthetic measure of the position on the latent predictive dimension (i.e. left-right ideology). Yet, at the cost of this assumption, it also allows us to compute an index to assess the dispersion of these positions.

A problem of measuring polarization as issue constraint is that we cannot distinguish a context of high intra-group coherence in the issue positions associated with low mean distances between-groups, and the separate case in which internal consistency is associated with wider-to-extreme between-group average distances. In fact, in practical applications adopting the first definition of polarization, the problem of separating internal coherence and external distance often remains concealed by the adoption of short ordinal scales that trap extreme and more moderate-but-neat positions clustering them at the endpoints of the scale. This induces internal consistency which is associated with between-group distance by construction.

It is important to distinguish the structure and the content of the two measures. Focusing on polarization as attitude constraint often leads to metric-free indicators such as correlation indices. These can provide a synthetic indicator of issue association, but contain information about actors' positions. Relying on a predictive dimension that is chosen deductively, polarization as positional distance leads to the key advantage of offering locations instead of correlations. Obviously, if we undressed the index of the underlying positional measure, this would basically become an empty indicator without any substantive information beyond an abstract notion of heterogeneity and dispersion. In this purest form, the idea of polarization does not indicate a content *per se*, but only the shape of a distribution.

In the following sections, I will provide insights into the deductive approach to dimensionality reduction. The key intuition is that when the empirical dimensional is theoretically well-grounded, and the latent construct is measured with appropriate procedures, then the trade-off does not entail a dramatic loss of information or measurement error.

3.2.2 Measures of party-system polarization

For about three decades, since Sartori's (1976) seminal work political scientists have classified party systems according to the number of political parties in the system (fragmentation). This represented an important step forward in understanding party systems. Before Sartori's investigation, and his category of polarized pluralism, party systems were interpreted basically as two-party or generally bipolar in the wake of Duverger's influential ideas of 'natural dualism' (Riker 1976; Sartori 1976, 116; contra: Wildavsky 1959). Sartori established the standard for classifying a party system as polarized 'around' five parties: "In short, the border line is not *at* five (or at six), but *around* five (or six)" (Sartori 1976, 117).

Among the features of polarized pluralism, Sartori mentions the presence of a bilateral opposition, a centre party that blocks the prospects of centripetal competition, and triggers the centrifugal dynamic. This idea, that in a polarized system parties will position themselves increasingly far from the centre was yet not linked to a proper measure but considered only indirectly in the classification scheme: Sartori stressed the ideological implications of larger fragmentation, but did not indicate a systematic index.

A first measure of party system polarization was developed in (Dalton 2008). His analysis is based on the intuition of integrating the logic of counting effective parties with positional information:

[T]he problem facing Weimar, the French Fourth Republic and these other examples was not primarily the number of parties but the vast ideological differences that separated parties and made governing problematic. The polarization of a party system is a property that can be independent of the number of parties, and I suspect that many of the effects attributed to the fractionalization of party system are better understood as a consequence of party-system polarization. (Dalton 2008, 901)

The measure Dalton proposes synthetically considers all the political parties in the system: his index is a weighted standard deviation of party positions:

$$PI_k = \sqrt{\sum_{j=1}^J \omega_j * \left[\frac{p_j - \bar{p}}{5}\right]^2};$$

where: ω_j represents the vote share of party j (the country index, k , is omitted to simplify the notation), p_j its left-right position, \bar{p} is the weighted average left-right position in the party system, the scale factor 5 is an arbitrary constant. The underlying positional measure is represented by party position on the left-right scale as perceived by voters, and thus implies all the perceptual and measurement problems listed so far: when researchers assume that voters' perceptions are directly comparable, then measurement error may bias this measure of polarization, as it is based on reported perceptions.

Another possibility would be to rely on external sources of party positions. One option is to gauge party positions by analysing party manifestos, such as the 'rile' scale from the Comparative Manifesto Project. Another option is to use expert ratings, such as the average scores from the Chappell Hill Expert Survey. The use of external scores avoids the potential pitfalls of using perceptual data, but it has its own problematic aspects, as different measurement issues arise. First, CMP scores are occasionally unrealistic at face validity. As the empirical chapters will show, the most right-wing party since 2008, based on the CMP 'rile' score of overall left-right placement, is the Greek Communist Party (rile index of +70.59). Likewise, there are cases where experts disagree on a party's position. The disagreement can be interpreted as the inability to decide on a position, and thus as evidence that that party is downplaying that specific dimension. This can be taken as a sign of high dispersion around the central tendency and thus as evidence of ideological ambiguity. Second, moving beyond few questionable cases, a problem with these estimates is that political communication is used as a strategic device: in particular, extreme parties can communicate strategically. A viable strategy of extreme parties is to try to expand their electoral potential towards the centre by mimicking a 'respectable face', adopting moderate language and a reassuring discourse to look closer to the mainstream parties they are

challenging. Likewise, mainstream parties challenged by radical political forces can try to communicate in such a way as to appear more extreme than they actually are in terms of behaviour once in government. The key point is that the only judge of the credibility of these strategic shifts are voters themselves. No expert and no party manifesto can be delegated to evaluate whether or not these strategies are successful. Third, party manifestos can reflect parties' short-term tendencies. In the words of Mair and Mudde:

[Party manifestos] are also explicitly designed in the context of election campaigns in order to publicize and clarify potentially appealing policy commitments, and it is these that remain contingent. Indeed, it is striking to note how, in certain cases, policy polarization as reflected by manifesto emphases appears to vary inversely with mass ideological polarization as measured by left-right self-placement. (Mair and Mudde 1998, 219)

In their judgements experts are also more likely to reflect short-term policy turns that may not be visible by less informed voters.

A final, and more fundamental problem is the incomparability of party positions from external sources with the positions of voters, and how this may lead to inconsistent estimates of issue voting models (a detailed account of problem is presented in section 3.4). In the next section I face the problem of the dimensionality of the political space from an abstract perspective, and present the two alternative approaches in the measure of the content of the latent dimensions.

3.3 A continuum, a plan, or a hyperplane? A deductive interpretation of dimensionality in the political space

The problem of producing a synthetic measure representing the positions of political actors in the political space first and foremost involves the identification of the relevant dimensions of the political space, with specific reference to their number and content. Facing this task requires some additional considerations.

3.3.1 Two perspectives on dimensionality

The European political space consists of a compound of national political systems. Given the large degree of historical, cultural and institutional heterogeneity, we can expect European party systems to compete on very different substantive policy battlegrounds. The identification of a general criteria to locate the lines of policy confrontation in a comparative setting has been one of the biggest challenges in political science. There are two opposite logics to achieve this goal. The first operates *a posteriori*, on empirical grounds, through dimensionality reduction techniques. This inductive way normally involves guessing the number of underlying dimensions via principal component techniques, or the study of correlations of latent factors with the visible indicators relying on factor analytical grounds. The second logic operates *a priori*, with theory-led propositions regarding the predictive dimensions that operate in the party systems being examined. The first approach generally requires a wide range of indicators, because the larger the available data pool the more fine-grained the set of latent scores indicating the positions on the underlying space. The second approach narrows down the data requirement through a careful specification of the necessary indicators. Therefore, the former approach relies on lighter assumptions and heavier data requirements in that it assumes the existence of one (or more) latent dimensions structuring the political space, while the deductive logic does not only assume the existence, but also the knowledge of the latent construct, so that the greater knowledge *a priori* is traded to reduce the data burden.

I favour the latter *a priori* approach over the former for two reasons. First, Benoit and Laver (2012; see also Laver 2014) provide persuasive epistemological and methodological arguments leading to the conclusion that good estimates of the positions on the latent scale are unlikely without prior substantive knowledge regarding the dimension we are trying to measure. The argument criticizes the agnostic accumulation of indicators, as this may lead the researcher to ignore what the indicators *should be* measuring, focusing on what they actually measure. Positional measures are affected by the choice of the specific observable indicators. Thus, they can potentially lean towards different underlying constructs, only partially related to the dimension of interest. Theory-free dimensionality reduction methods could in principle estimate latent positions and help to identify the number of relevant dimensions, but depriving the analysis of the insights of the theory will probably produce

considerable noise in the outcome. In conclusion, the inductive solution seems suboptimal for survey-based, large comparative analysis.

Second, the theoretical model presented in the previous chapter points to two well-defined underlying dimensions: a general left-right ideology and the EU integration dimension. This provides clear deductive guidance as to which indicators should be adopted to position parties and voters. Moreover, the left-right dimension allows a large comparative analysis. Notwithstanding some notable exception¹⁴, over 60 years of study and empirical evidence over 120 years from political systems across the Western the world indicates a ubiquitous left-right continuum as articulating democratic electoral competition worldwide (Bartolini and Mair 1990; Downs 1957; Poole and Rosenthal 1997). In much the same way the contestation of the European Union that followed the Maastricht Treaty, particularly after the Euro-crisis, has created, as I argued in the previous chapter, a second orthogonal line of confrontation.

In what follows, I abstract from our specific case, to generalize the discussion of the latent dimensionality of a political space.

3.3.2 Latent dimensions and the concern of high-dimensionality

Two key elements must be defined to allow us to position political actors: the dimensionality and the substantive content of political dimensions. As previously argued, without theoretical priors on these two elements it is hardly feasible to produce reliable spatial representations of political actors, and virtually no inductive method can compensate for the lack of substantive knowledge.

The first aspect relates to the number of dimensions required to provide a satisfactory description. As a general rule, the number of potential predictive dimensions is either one, two, or — maximum — three. This number is kept low by the fact that differences across all the possible issues tend to create ‘bundles of correlation’ of restricted dimensionality. So even if we do not really know whether these dimensions exist ontologically, we can still reason *as if* they do, exploiting these correlations around the latent component. Adding

¹⁴ For instance, Jean Paul Sartre has famously described left and right as ‘empty vessels’ after the crisis of modern ideologies.

dimensions without theoretical guidance is in practice precluded by the ‘curse of dimensionality’¹⁵. Any attempt to include additional dimensions will generally lead to extreme additional costs for negligible improvement in terms of predictive capacity. Yet loss of information is not necessarily a bad thing as it removes nuisances and unnecessary detail and allows us to focus on important underlying structures.

At its core the idea of dimension must be conceived as an exercise in complexity reduction. Notwithstanding this, one could make a case for a large number of dimensions to provide a full account of political positions. Yet, if this is the case, and multiple dimensions underlie political competition in the political space, then it would again be possible to operate a higher-level dimensionality reduction and construct a small number of super-dimensions, because assuming orthogonality on more than three dimensions would produce a number of parties not found empirically. From this perspective, it is reasonable to think of specific political issues as ‘low-scale’ dimensions. If we follow this path, we can argue that issues are not simple political statements. Issues often involve a bundle of complex, if not contradictory, facets. Therefore, we could conduct surveys collecting multiple questions on single issues, in order to map political actors on that specific issue space. There is no limit to complexity in this world for those who are willing to study narrow aspects, but in order to understand the political system in its generality, and in a comparative setting, this approach would be inappropriate and lacks a sufficient level of abstraction.

Thus, we can think of latent dimensions as bundles of correlations that organize and constrain party positions on specific issues. In substantive terms, this ‘bundling’ of issues has been described as the process of structuring: “[S]ome issues are able to relate themselves easily to clusters of parallel cleavages in the same general dimension” (Schattschneider [1960] 1975, 72). The stronger the predictive validity of the considered dimension, the tighter the constrains on issue positions, and therefore the better the predictions regarding the specific policies based on the latent score.

¹⁵ The curse of dimensionality is the exponential relationship between the number of dimensions considered and the number of observations required to identify distances on all the implied dimensions. In practice the result is that in all high-dimensional contexts — irrespective of how much data is obtained — the data matrix will be extremely sparse. For a high-dimensional application to the dimensionality of the political space in the U.S. Congress see (Aldrich, Montgomery and Sparks 2014).

We can describe the process that leads from policy issues to the underlying dimensions as a process of condensation and abstraction. Synthetic latent scores represent generic positions on the more detailed sub-categories in a condensed form. These latent scores allow researchers to learn about specific policy stances based on a single value on a more abstract category. For instance, we can consider the specific issue of animal rights. To know that an individual is generally in favour of protecting animals can reasonably mean that this same individual may support improving the well-being of animals in industrial animal husbandry. Here, the more general position is predictive of more specific attitudes. Clearly, this tells us little about the respondent's opinion about government spending on public transport. Yet, we can increase the level of generality of our score to achieve more encompassing measures: the more abstract our measures, the less likely they are to remain independent from specific issue positions. To see this, consider the two previously independent issues of animal rights and public transport. Let us imagine the collection of an entire battery of items regarding environmental policy preferences: alongside animal wellbeing, we can also consider issues such as rules to limit Co₂ emissions, the expansion of renewable energy, taxes on fossil oils, and so forth. Then, we may collect the same kind of detailed information regarding transport issues, including e.g. preferences for building additional parking lots, the creation of bike paths, the extension of night-time public transport. At this point, we can realize that as soon as we multiply the specific single issues, we increasingly abstract and generalize, starting to focus on the underlying regularities. We can see that if, for example, a respondent can express support for rules on limiting Co₂ emissions and for expanding renewable energy plant also at the cost of introducing new taxes on fossil fuels, then we can learn something that goes beyond the two answers considered separately: we learn that the respondent is progressive on environmental policy. Environmental progressiveness is different from support for animal welfare. One may support the latter for personal circumstances (e.g. owning a pet) without translating this specific opinion into a broader environmental conscience. But the former idea requires the elaboration of a coherent structure of positions on specific issues. Therefore, knowing that a person is environmentally progressive, gives us leverage to predict that they will probably also be in favour of supporting public transport, because this is considered an environmentally-conscious form of behaviour reducing reliance upon fossil

fuels. The general left-right can be thought of as a higher-level projection of the example of the position towards environmental issues, in fact as the most general projection.

For these reasons, once we believe that our theoretical priors regarding the number and content of the dimensions in the political space are sound, then we can avoid such 'high-dimensionality' considerations. If the number and content of dimensions are carefully chosen, then we can explain a great deal of variation in the preferences of political actors with only one or two very general positions.

To recap, a trade-off between analytical parsimony and the principle of maximal predictive capacity characterizes the study of the political space. I remain sceptical about the very existence of a 'true' number of underlying predictive dimensions: a true number of dimensions is practically non-existent, but can be established based on the optimal degree of simplification of the political space in a way that makes it suitable for systematic empirical analysis. A latent dimension does not exist in the ontological sense but represents a cluster of empirical correlations that can be exploited by researchers to condensate a large variety of directional issues into a single abstract but condensed position.

3.3.3 Left-right positions, policy issues, and party images

A strong theoretical prior suggests that 'left' and 'right' deserve a status of special categories in political research. In this section I make a critical re-examination of this idea. I argue that these two categories deserve to maintain a privileged status as key political categories for three major reasons. First, over the last two centuries left and right have developed a meaning that makes the two labels understandable to the vast majority of citizens in democratic polities. While the arguments of rational consensus and deliberative democracy can describe some local policy decisions, the bulk of national political debate is systematically articulated along different shades of confrontation and conflict between antagonist factions. This has led to ubiquitous dialectical political dynamics between a 'left' and a 'right'.

Second, the two terms do not imply specific policy positions, but indirectly cue to deeper political values. This is important because it is this indirect invocation that allows the continuous updating of the meaning of the two labels. In fact, when the term 'left' is used, the meaning invoked refers to a range of values whose pillars range from the principles of

egalitarianism (Bobbio 1996) and social justice to be pursued even at the cost of sacrificing economic freedom (i.e. for the 'left'/'far-left'), to the egalitarianism pursued together with economic freedom (i.e. for the 'centre-left'). When the 'right' term is used, then the meaning is related to a range of principles identifiable on one side ('centre-right') with the defence of liberty — with allusion to economic more than personal liberties — and on the other ('right'/'far-right') the defence of the nation. The reference to this kind of deep political principles may involve different policy packages depending on the socio-economic and historical conjunction of the polity. The labels do not establish a direct link to concrete policy measures. For instance, we do not know whether a centre-right policy involves introducing a top marginal income tax rate of 50 per cent, or to a flat-rate income tax scheme, because this will clearly depend on actual conditions. Today we think of a top marginal income tax rate of 50% as a progressive measure. However, this depends on the current neoliberal fiscal regimes. In 1982, the 50 per cent rate was introduced by President Reagan, who cut the previous marginal rate of 70 per cent. Instead, the labels are an indication of the probable direction of the policy package, which has to be mediated with the current structural conditions in the polity.

Third, referring to deeper political values rather than actual policies, 'left' and 'right' can travel temporally and across countries. These two terms are special in that the unfolding of political events and the strategic interactions of political actors produce almost automatically the update of their specific practical meaning. The ideational content is almost invariant, while the practical policy implications in fact vary substantially. This latter consideration explains the widespread diffusion of the left-right ideology scale in comparative analyses.

Therefore, left and right do not link to specific policies directly. In other words, left-right usefulness can be attributed to a conceptual shift from the specific domain of policy issues, to the more abstract domain of *party images*. The concept of image has not been sufficiently appreciated by political researchers, and the related concepts of issue positions and identification are generally preferred. Party images represent a middle ground between the positions on issues and identification with the party. They are what allows a spatial ordering of the parties in the perceptions of voters. Sartori (1976) dedicated a revealing passage to the concept which pinpoints the key features of party images:

The [spatial model of party competition] applies best under the assumption that voters are ideologically conscious and sensitive to the left-right imagery. The intuitive reason for this is that issues can hardly be reduced to a single dimension, whereas the most attractive property of the Downsian model is precisely its unidimensionality. Upon further reflection, however, it appears that the [findings from the ANES data of the 1960s and 1970s, vindicating the applicability of the Downsian model] do not easily fit the Downsian model unless an additional concept is entered — *positioning* — under two formulations, namely, *position-perception* and *position-image*. The notion of position-perception implies that the voter places himself and the parties in some kind of *spatial ordering*, in a row; and the notion of position-image implies that parties maneuver precisely for conveying to the electorate a *spatial location* of themselves. Given position-perceptions and position-images, then — but only then — can we fruitfully employ the notion of ‘issue position’ in an ‘issue space’. (Sartori 1976, 296)

My perception is that Sartori identifies the critical argument to favour perceptual data from electoral surveys over external data. In fact, the basic argument can be summed up in the need for a positional criterion, in order to produce an ordering of voters and parties. This argument appears to be irrefutable: we cannot have an order, unless we preliminarily agree on the ordering criteria. Therefore, Sartori concludes, spatial competition is enabled by the development of voters’ capacity to produce abstract projections (‘position-perceptions’). Then, as previously noted discussing the idea from Enelow and Hinich (1984) regarding party strategies as manipulations of voters’ perceptions, political parties can affect these perceptions and try to maneuver their own projected image. External data sources, such as expert surveys and manifesto scores, aim to capture the position-image, whilst we are interested in the position-perceptions of voters. In this sense, election surveys are the only source of data that can represent party positions abstracting from strategic position-images.

3.3.4 Left-right as a unidimensional representation of the European political space

In the last section, we referred to Sartori’s analysis to argue that voters and parties in Europe have developed a shared political imagery of positions and images that can be exploited to extend the Downsian spatial framework to a comparative setting. Once the literature — including studies on mass politics and parliaments on both sides of the Atlantic — is

reviewed, it becomes clear that the general left-right dimension characterizes virtually all political systems (Benoit and Laver 2006; Huber 1989; Huber and Inglehart 1995; Jahn 2011; Mair 2007; McDonald, Mendes and Kim 2007; Mölder 2016). The same result has been found with roll-call votes for legislative bills from the U.S. Congress (Poole and Rosenthal 1997) and from the European Parliament (Hix, Noury and Roland 2006). Notwithstanding, the assumption of unidimensionality has been heavily criticized. I thus briefly reconstruct the debate around the idea of unidimensionality.

The seminal analyses of Hotelling, Smithies and Downs first described the mechanics of a unidimensional political space. In particular, since Downs' (1957) chapter on "The Statics and Dynamics of Party Ideology", it has become widespread the interpretation of a unidimensional political space organized around political ideologies. As well known, Downs had "to assume that political preferences can be ordered from left to right in a manner agreed upon by all voters" (Downs 1957, 115). All spatial analyses thus rely on this basic assumption: voters should agree on the ranking of political parties. The 2S-BAM model presented in the next chapter makes no exception, although it allows objective positions to be affected by perceptual bias.

To better qualify this point, it is worth recalling that the Downsian model of spatial competition was rejected by Donald Stokes (1963) for three reasons. First, Stokes argued that Downs' translation of Hotelling's 'market competition' model from the domain of consumers to the domain of voters disregarded the fact that a political space does not normally satisfy the axiom of unidimensionality. Stokes mentions as evidence accounting for this, the finding of the Michigan Survey Research Centre for the Presidential elections of 1952, 1956 and 1960 that "[...] only about a tenth of the electorate by the loosest definition is found to be using the liberal-conservative distinction or any other ideological concept" (Stokes 1963, 370). We have reviewed the similar concerns from Converse regarding the presence of non-ideologues. Yet, this argument sounds unconvincing in the light of the previously recalled empirical findings pointing at spatially-ordered ideological dimension to represent party competition. Moreover, as I argued in the previous chapter, when not accounted for, perceptual distortions can lead to confusion and create disagreement where agreement exist.

Secondly, Stokes points out that spatial models rely on a fixed structure of political competition, while in reality what happens is that the political space is neither unidimensional nor fixed: “Just as the parties may be perceived and evaluated on several dimensions, so the dimensions that are salient to the electorate may change over time” (Stokes 1963, 371). This point deals with the interpretation of positions as issues, not as images, or invocations of deeper political values. It is worth mentioning here Sartori’s (1976, 298) famous argument that an 1848 French political dictionary already deemed as ‘old distinctions’ the fact that the members sitting on the left side of the French Chamber of Deputies were defined ‘defenders of the principle of liberty’, while those sitting on the right side were defined ‘defenders of the principle of power’. As we have seen in the previous section, the circumstance that left and right are not substantive issues, but are instead generic categories that continuously update their substantive content is in fact what explains their persistent analytical power. While we cannot axiomatically assume the perpetual or exclusive existence of this predictive political dimension, we can reasonably presume that the transformation of the basic line of conflict in Western democracies would require economic and social shocks of the size of those triggered by the industrial revolution.

Finally, Stokes challenged the ‘ordered dimensions’ axiom by looking at the saliency of the corruption issue during the 1952 Presidential elections, conflicting with the notion of progressive consensus over ideological closeness that lies at the core of the Downsian model. Yet, we should acknowledge that valenced political competition does not exclude a directional mechanism *per se*. In the first place, valence politics is normally based on a pre-existing convergence on a spatial dimension or on a similar consensus over policy objectives. Given that the parties’ issue positions have converged, competence-based mechanism may drive the electoral dynamics (see, for instance, Green (2007) with regards to valence politics in the United Kingdom). For this reason, valence models have a circumscribed validity, contingent upon consensus. Valence competition appears rather limited, appealing in a context of two-party systems with moderate polarization. Moreover, recent scholarship aiming at bringing together valence politics and spatial competition has revealed that valence

considerations can be activated by the ideological dispersion of political parties (Clark and Leiter 2013).¹⁶

To conclude, the emergence of the shared imagery of a left-right divide is one of the most striking political dynamics originating with the Enlightenment and the French Revolution, developing through the turbulent nineteenth century. This is a process of transformation of the old medieval factional-territorial conflicts into modern political cleavages centred around the conquest/opposition of broader civil, political and social rights (Marshall 1964; Moore 1966). The consequence of this Europe-wide fundamental societal transformation presents striking similarities across all European party systems, and has led political scientists to capture political conflict in modern Europe as organized around two ideological poles (Downs 1957; Sartori 1976). This helps us identify the first basic line of conflict in European politics as the left-right dimension as not just theoretically meaningful in the light of modern European history, but also because it is politically significant in virtually all European party systems.

3.3.5 Contesting Europe? The logical unfolding of a second dimension

Polarization can stretch the ideological space to the point that more extreme actors become substantially further from the moderates, further than the moderates are between themselves. I conjecture that a second dimension may thus arise naturally as the unfolding of the first dimension in a context of high polarization, dividing the centre from the extremes. The mechanism works as follows: extreme parties are rewarded by voters, triggering a centrifugal competition dynamic that moves them further apart. In such a context of high polarization and centrifugal competition, it opens a window of opportunity that can trigger a new front of competition between ideological extremes and moderate parties on a second

¹⁶ Evidence favouring this alternative perspective has been produced particularly in the United Kingdom, where (Sanders, Clarke, Stewart and Whiteley 2011) employed the six-waves BES panel survey to test these two competing explanations of the vote. In terms of the direct effect on the vote, their results are compatible with the finding of (Green 2007), pointing at a centrality of competence-based considerations in British politics. Nevertheless, modelling the reciprocal effects illuminates that most of the valence direct effect on the vote is explained by the spatial model, who affect the vote *via* the valence judgments. Far from drawing premature conclusion from such recent analyses, I only suggest that it would not be heretical to conceive valence judgments as being indirectly informed by spatial considerations. It appears more reasonable to think of directional considerations as informing valence judgement rather than the other way around.

dimension. In this way, extreme parties can compete with moderates exploiting the distribution of voter preferences on this second dimension, if moderate parties also stand together on the same side. I argue that the contestation over Europe has represented a way to open such a window of opportunity.

This view has also received convincing empirical support. In particular, one of the soundest analysis of the dimensionality in the European political space to date is the expert survey study by Benoit and Laver (2006) about “Party Policy in Modern Democracies”. Their framework is compatible with the setting advanced in the previous sections: they elaborate a compact set of predictive policy dimensions with an *ex ante* deductive approach. Then, they ask experts to place parties’ positions on issues related to those dimensions. Finally, they submit the matrix of policy positions to empirical scrutiny by means of factor analysis to retrieve the latent political dimensions. In Benoit and Laver’s framework the number of political dimensions arises from orthogonal policy issues. They consider a total of 47 countries, including all Western and Eastern European countries, with 1,491 expert responses placing 387 political parties on 37 policy dimensions, including the economic left-right, the positions on social issues (abortion, same-sex marriage, euthanasia), relations with the European Union, the decentralization of decision making and environmental policy.

Benoit and Laver’s weighted importance scores points towards a generic left-right dimension as the most important policy dimension in Western Europe, accounting, for example, for 48 per cent of the total variation in policy positions in the Netherlands. Left-right appears to be dominated by economic issues, but it also correlates — i.e. it is not orthogonal — with immigration and environment issues. The second factor emerging from their analysis appears to be relations with the European Union:

[...] a debate has emerged in the literature on European integration about whether party positions on EU integration are orthogonal to the traditional left-right axis of political competition or have been subsumed as a new substantive feature of the left-right dimension. [...] Our results support the [orthogonal] view. (Benoit and Laver 2006, 170)

These findings also appear to be supported by the evidence of a “bipolar Euro-Skepticism” (Marks, Hooghe, Nelson and Edwards 2006). The non-linear relationship between the position on the left-right continuum and support for the EU points towards the

understanding of European integration as a 'centrist project', supported by mainstream parties and opposed by radical parties on both side of the ideological spectrum.

The choice of political parties' policy stance on EU issues as the second dimension in European party systems is also motivated by the literature on the Europeanization of party politics, and especially by the finding that the EU has influenced national party systems, both in terms of organizational adaptation of national parties as a response to growing European integration, and in terms of political cleavages and the dynamics of party competition. In a comparative analysis of European party systems, Külahci (2012) finds three patterns of evolution of domestic party systems as a response to the EU integration: 1) Europhile party systems have the distinctive feature of the absence of significant European oppositions (i.e. under 10 per cent of parliamentary seats), indicating as instances Italy, Germany and France — the strengthening of the National Front, the Movimento Cinque Stelle and the Alternative für Deutschland may cast some doubts on the present validity of this finding —, Spain and Romania; 2) divided party systems such as Hungary, Poland and the United Kingdom, with a confrontation between Eurosceptics and pro-European parties; and 3) party systems with significant Eurosceptic parties, such as Belgium, the Netherlands, Ireland, Denmark, Portugal, Austria, the Czech Republic, Latvia, Estonia and Bulgaria. This suggests that, with the possible exception of a handful of EU founding countries, the omission of the EU as a second analytical dimension would lead to serious oversimplification of the patterns of political competition and consequently to underestimate the level of overall political polarization in the European party systems.

Following this perspective, we can say that the second dimension still operates similarly to the left-right: one expects specific positions in terms of the left-right scale to be predictive of more specific issues stances, such as on taxation, welfare, and environment; then, also the general attitude towards the European integration should thought of as predictive of the position of the voters on more specific issues such as competence attribution, vertical organization of decision-making, and membership extensions. These are what Bartolini (2005, p. 310) defines as constitutive issues. However, the European Union is also a generator of policy-related issues, such as the definition of common elements in terms of foreign policy, or the adoption of the Bolkestein directive. The predictive power of the general left-right is probably larger for this second category of EU issues. If these issues are those which polarize

the electorates to support or contest the European Union, then the left-right dimension would be also predictive of the EU dimension. This can indeed contribute to make the orthogonality between the two dimensions imperfect¹⁷. To some extent, one can connect policy issues with a functional representation of the interests in the nation states, and constitutive issues to a more territorial form of representation. Hutter, Grande and Kriesi (2016, p. 155) study the relationship between the politicization of the European integration and European constitutive and policy issues. Their analysis leads them to conclude that: "In all the electoral arena of all the countries, political conflicts over constitutive issues add far more to the overall level of politicization than do conflicts over policy issues. All highly politicized election campaigns saw major conflicts over the fundamental features of the EU political system." This evidence leads me to consider the European integration as an indicator of a position on a substantively different dimension, which can be only marginally related to ideological orientations, if not specified in terms of the moderation-extremism divide¹⁸.

3.4 The incomparability of latent positions as a problem of omitted variables

In the light of the previous section we have identified election surveys as the only data source that allows us to separate what Sartori calls 'position-perceptions' from strategically-induced 'position-images'. Nevertheless, I have previously argued (see Chapter 2) that perceptual data may suffer subtler problems and I deal with these issues in the second part of the chapter. In particular, the crucial task will consist of separating out the measures that we normally use in empirical analysis, to separate *manifest expressions*, such as an item involving the approval or disapproval of a specific issue or piece of legislation, from the *unobservable constructs* such as attitudes and preferences regarding abstract and multidimensional concepts such as left-right ideology and EU integration (Treier and Jackman 2008).

¹⁷ This is likely to be the case even if the left-right would not be tapping the European policy issues. In fact, the EU has not become politicized in a single episode, but in various occasions in different national political arenas, and therefore it can be expected that its structuring power will differ across party systems.

¹⁸ An open question that remains with this approach is to what extent the position towards European integration is tapping the socio-cultural dimension of the TAN-GAL divide. I believe that, indeed, the Eurosceptic front could be largely represented by TAN political parties, probably to a larger extent to which the group of pro-European parties would consist of alternative and libertarian parties.

In this section I provide a detailed account of three basic, yet undervalued, sources of incomparability in survey-based positional measures: 1) the discrepancy of voter and party scales; 2) voter-level Differential Item Functioning (DIF); and 3) country-level DIF. The first incomparability prevents researchers from directly comparing measures either from different sources, or referring to different units of analysis or groups with disjoint choice sets. The second one prevents researchers from directly comparing voters' self-reported positions. Finally, the third is the potential incomparability of voter and party positions across countries.

The three sources of direct incomparability have been neglected in most empirical applications to date. In this section I will list the main exceptions in research. The researcher who proceeds with one or more of the three direct comparisons is unwittingly invoking a strong assumption of equivalence. When the assumption of equivalence does not hold, then the measurement error will produce biased and unreliable estimates.

Nevertheless, researchers are well-aware of the importance of controlling for unobserved idiosyncratic factors. During statistical methods' courses, students are made aware of the potential bias deriving from unobservable individual features. In particular, they are taught that cross-sectional surveys are particularly vulnerable to this problem. Therefore, the common wisdom goes, we should privilege panel data, that allow us to estimate fixed effect models. These models can in fact achieve more reliable inferences, as they are able to control for all time-invariant unobserved factors.

The classic fixed-effect model can be described as:

$$y_{it} = \beta_0 + \mathbf{X}_{it}\boldsymbol{\beta} + a_i + \varepsilon_{it};$$

where a time-varying response variable y_{it} is modelled as a function of a set of voters' covariates \mathbf{X}_{it} , and ε_{it} is a stochastic error term. The term a_i refers to the unobserved time-invariant individual features.¹⁹ Then, one can exploit repeated observations to control for all time-invariant unobserved effects. This is particularly useful when the latent variable a_i may

¹⁹ Generally speaking, a_i is indicated with a Greek letter such as α_i . In this case I avoid this notation to emphasize that while the β s in the 2S-BAM model presented in the next chapter are *parameters* that can be estimated, a is a *random variable* that cannot be included among the covariates in \mathbf{X} due to the fact that is unobserved.

be correlated with some observed variable in \mathbf{X}_{it} , as this would bias the corresponding coefficients in β .

The key point is that, as far as there is a source of anchoring information, it is indeed possible to control for such unobserved effects with cross-sectional data. This is indeed what the 2S-BAM model achieves. Moreover, the scaling approach produces three important advantages over the differencing/fixed-effects panel solution.

First, in panel data model, the researcher tends to assume the existence of unobserved effects and controls for them throughout the estimation, but there is no indication of what the unobserved effects may actually consist of. Moreover, when an observed feature of interest is time-invariant, the procedure will not allow the estimation of this effect as it would be dropped as perfectly collinear. When it comes to the scaling approach proposed in the next chapters, this does not just control implicitly for unobserved effects, but instead estimates explicitly voters' idiosyncratic features in the form of latent parameters of scaling distortions. Therefore, different theoretical expectations about the idiosyncratic terms can be modelled accordingly. In this sense, latent measurement and scaling techniques are superior panel data models, since they do not imply a 'blind' control, but produce parameters that depend on the model specification.

Second, in the scaling approach, in contrast to the classic panel data approach, a_i is interpreted as a *parameter* rather than as a *variable*. This means that numeric estimates can be produced of the individual latent features, which in turn allow us to study unobserved idiosyncratic effects as dependent variables at a later stage (as I do in hypotheses H1–H8). Naturally, these individual parameters can also be used for statistical control.

Finally, panel data implicitly assume a specific configuration of unobserved effects: they enter in the equation additively. This means that when their effect is non-linear, the fixed effect estimates will remain biased. In the scaling approach, however, individual latent variables can be modelled with interaction terms. In our case, I not only include a linear idiosyncratic term (a_i), but also a non-linear distortion that depends on the position of the parties (β_i). This feature will be used in the next chapter to estimate voters' unobserved stretching/shrinking of the political space.

Given the absence of large comparative panel datasets, it is striking that these considerations are largely ignored when dealing with cross-sectional data.

3.5 The voter is an apple, the party is an orange

Students of political competition often build their models on the assumption that voters and parties' positions are correctly measured, and can thus be compared directly. On the basis of this assumption, there are basically three approaches to investigating party-voter relationships (Lo, Proksch and Gschwend 2014, 207): first, we can measure the ideological placement of voters by looking at their self-reported ideological stance on the left-right scale, and then compare it to party positions as coded in manifesto studies or expert surveys; second, we can compare voters' self-reported left-right positions with the perceived party positions; finally, we can use the average voters' perception as party position.

We focus now on the first method. In fact, while all the difficulties of these data sources listed in Section 3.2.2 in the context of polarization measures also apply here, the comparison of latent measures for different units of analysis implies additional complications. In fact, data sources such as expert surveys and manifesto studies are expressed in terms of measurement scales that differ from those used in mass surveys of voters. Researchers often deal with the problem linearly transforming the measures in order to have common endpoints. Unfortunately, the problem only partly depends on the numeric range of the scales. As a hypothetical example, a score of 5 on a 0–10 left-right scale that is obtained as linear transformation from the 'rile' Comparative Manifesto scores (i.e. corresponding to 0 on the original scale ranging from –100 to +100) is not equivalent to a score of 5 self-reported by a voter: the CMP score is an interval-level average of a variety of numeric indicators considering different aspects, while the voters' left-right is a subjective perception expressed on a discrete scale that may consider other aspects. Thus, these measures should not be used directly to test hypothesis about voter-party relationships, such as the theoretical propositions deriving from spatial voting theory. This comparison is flawed in its assumptions because it does not acknowledge that the two different classes of agents are disjointed, and thus the measures of a latent concept would map into two different measurement spaces.

3.6 But there are apples and apples: the problem of subjectivity in voter perceptions

In the first chapter, I provided a first intuitive representation of the problem of inter-personal incomparability relying on the example of measuring air temperature without a thermometer. In this section I develop that intuition further, and I start with a philosophical perspective to show how widely different reasoning approaches converged on the existence of a subjective aspect of knowledge.

In one of the most famous critical discussions on the nature of ideology, the structuralist philosopher Louis Althusser described ideology in the following terms: "Ideology represents the imaginary relationship of individuals to their real conditions of existence". In the structuralist perspective ideology inherently contains an element of subjectivity that depends on the meaning assigned by individuals to structural elements such as their living conditions. Jaques Derrida's deconstructivist viewpoint represents an opposite angle. He described ideology in his comment on Marx's *The German Ideology*: "If one follows the letter of the text [The German Ideology], the critique of the ghost or of spirits would thus be the critique of a subjective representation and an abstraction, of what happens *in the head*". Even the materialist ideology *par excellence* can thus be de-constructed and reduced to a subjective 'spectrality'. Irrespective of the fact that subjectivity may depend on external structures or internal constructions, the consequence of a subjective viewpoint on the measurement of unobserved constructs will affect the principle of equivalence and thus the possibility of direct comparability of voters' positions.

The subjectivity of ideology has also been acknowledged in other areas apart from critical cultural studies. As recalled, Converse (1964, 241) showed that only a minority of voters adhere to a political ideology, while the majority are 'innocent of ideology'. What is important here is that Converse is indirectly pointing out this incomparability problem, as 'ideologues' and voters with 'no issue content' are different in kind, not in quantity. This is, in other words, a manifestation of inter-subjective incomparability (Differential Item Functioning, DIF).

DIF can be defined as a difference in the probability of response to a test-item between groups of units, conditioned on the same value of the latent construct being measured. DIF can bias survey responses if voters with the same latent ideological position attribute different meanings to the same question (Aldrich and McKelvey 1977; Alvarez and Nagler 2004; Palfrey and Poole 1987). One common reason of DIF is scale perception bias: voters do

not necessarily have the same perception of scales. Each voter is the unique product of the social, cultural, and economic conditions in which they are embedded. Appreciating this uniqueness lead to the insight that problems may arise if voters' heterogeneity is reflected in their own perceptions of political reality. Scale incomparability thus posits a fundamental challenge to the empirical researcher. In the words of Benoit and Laver:

There is a ring of solipsism to the superficially attractive argument that every one of us views the political world from his or her own unique perspective, so that no common view of the political world can be shared by a group of people who interact with each other. (Benoit and Laver 2006, 23)

If a 'ring of solipsism' would lead to a complete inability to reconstruct comparability among individuals, its denial does not automatically mean a shared view of the political world across the entire electorate. This issue is further illuminated in the words of Brady:

The lack of interpersonal comparability in survey responses may pose a more serious difficulty than either errors in measurement or ordinal data. [...] The most important distinction, between manifest and latent scales, is now commonly made throughout the statistical literature. Although the method of data analysis must take into account the characteristics of the manifest scale (i.e. measurement level, measurement error, and problems of interpersonal comparability), the goals of data analysis must ultimately be guided by the nature of the underlying scale, and the nature of this scale is intimately related to the theories developed for understanding the phenomena at hand. [...] it may be dangerous to treat intrapersonally ordinal data as if they were interpersonally comparable interval data. (Brady 1985, 269)

In other words, latent concepts cannot be measured as if they were observable. We should not automatically assume that different people providing the same values necessarily indicate the same position, because those numeric values only have a substantive meaning that is rooted in the minds of voters, in a subjective issue-space. These points are well-taken in other social science disciplines but are still routinely missed in contemporary applied political research.

The lesson from Aldrich and McKelvey

Asking voters to position political parties on a scale leaves them free to express their subjective perceptions. The fact that the scales indicate the same range of possible values,

such as from 0 to 10, does not indicate the meaning that voters have of the endpoints at the moment they respond.

The faulty belief that reported perceptual data using issue scales is directly comparable can lead to inconsistent estimates of political actors' positions and magnify the dispersion around their average locations. This measurement error has contributed to generate evidence in favour of the view that voters probably do not possess the necessary knowledge to understand where political parties stand, and consequently to activate the mechanism of issue voting.

Much of the work in this dissertation thus stands on the side of Aldrich and McKelvey's contribution, building on their original idea:

[M]uch of analysis of this type of [perceptual] data indicates [...] substantial disagreement between different individual perceptions of candidates [...] Further, a natural interpretation of such data [...] is that voters don't have the necessary information to evaluate and intelligently vote their preferences in an election, as it is assumed by spatial theories. [...] [W]e suggest an alternative interpretation [...] and argue that at least part of the confusion which has been attributed to the voter may be attributable purely to methodological difficulties. (Aldrich and McKelvey 1977, 112)

3.7 The problem of cross-country incomparability and the main solutions

Interpersonal incomparability is not the only concern. In fact, not only should we not directly compare voter perceptions, we should not compare them directly across countries. This means that comparative analyses are flawed by cross-country incomparability of issue scales (Lo, Proksch and Gschwend 2014). Ideological positions in party systems are unlikely to be directly comparable given specific historical heritage, economic, institutional and constitutional frameworks, religious beliefs and cultural traditions. When this direct comparison is done, the researcher is again assuming equivalence (overlapping origins and endpoints).

Taken to the extreme, the same substantive position on a specific issue could actually belong to the opposite sides of a common space: for instance, to defend a constitutional right to own guns for personal defence is considered a (very) conservative position in European countries, which traditionally conceive the state as having the monopoly of the legitimate use of

physical force. However, due to cultural, historical and constitutional specificities this position is widely shared even among liberal American politicians. Analogous examples may involve different religious background, when comparing positions on issues such as gay marriage or abortion in a traditionally secular country such as France and in deeply catholic one such as Poland. Building comparable measures in a comparative setting requires the origins of the political spaces of different party systems to be shifted in order to retrieve the comparability of the measures.

Even if we correct for interpersonal incomparability of issue scales, comparative analyses need to address this additional source of incomparability that stems from cross-country perceptual biases. As in the case of voters, party systems too do not necessarily share common origins and metrics. Thus, to produce unbiased estimates and compare individuals and political parties across countries we would need to compute country-specific location and shape parameters.

Anchoring vignettes

It is striking that expert surveys do not represent a solution for cross-national (and inter-temporal) incomparability across parties (Groseclose, Levitt and Snyder 1999), even though this is often the reason why expert surveys are designed. Experts also have their own specific ‘frames of reference’ deriving from differing cultural contexts. As reported in the first chapter — with respect to the comparative assessment of political efficacy — King, Murray, Salomon and Tandon (2004) resolved this problem by introducing short vignettes with the description of hypothetical situations, in order to estimate and control for country-specific DIF. A similar procedure has been implemented in (Bakker, Jolly, Polk and Poole 2014) embedding anchoring vignettes in the 2010 Chapel Hill Expert Survey to correct for cross-country incomparability. Vignettes are only one possible way to ‘bridge’ observations across countries. These are short descriptions containing special stimuli (generally hypothetical) that can be reasonably thought of as objective conditions, that can be positioned by experts from different countries (and basic spaces). In sum, if standard reported perceptions can incorporate a random error, the systematic component (what should be measured), and the subjective component (DIF), vignettes should only incorporate the random error and DIF. In this way we can measure and correct the interpersonal incomparability.

Bridging observations

Along the same lines, bridging observations are actual (rather than hypothetical) observations that can be used as anchors to rescale different party systems into a single common space. For instance, one problem could be to place members from two chambers in bicameral legislative systems on a common ideological space. The solution would be to use the legislators who are elected for a second mandate in the second house as bridging observations, assuming their ideological continuity (Poole 2005). Similarly, we can bridge legislatures over time by examining MPs serving for the second mandate.

More specific issues are likely to exacerbate cross-country incomparability, but the same problem can also apply to the more general ideological space. For instance, a specific party system may lack a strong radical right party. Then, voters could associate a relatively moderate conservative party at the endpoint of the ideological dimension. Nothing guarantees that a value of 8 (generally right-wing) assigned to a party in Italy, where radical right parties have been traditionally represented in the parliament, corresponds to a value 8 assigned to another party in Spain, where the most right-wing party in the parliament belong to the European People's Party. Similarly, the left endpoint will be relatively well defined in countries that have been characterized by strong Communist parties, or that have experienced Soviet Communism.

In the same way individuals can have different perceptions of the ideological space, party systems may also not have perfectly overlapping endpoints. In the previous cases, the only meaningful comparisons are those operated inside the same issue space: to operate cross-national comparisons, researchers should first 'bridge' the nation-specific issue spaces to recreate a Common European Space.

In operationalising this reconstruction, I will follow the strategy developed by Lo, Proksch and Gschwend (2014), exploiting national parties' membership in the EP political groups as bridging observations. By assuming that national parties decide their affiliation inside the European Parliament based on the ideological proximity to European groups, we can estimate country-specific distortion parameters and rescale the issue spaces to retrieve a common European ideological space. This also allows us to provide comparable ideal points for voters, political parties, and (by-product) European political groups.

The procedure that corrects for interpersonal and cross-country incomparability is presented in the next chapter.

Chapter 4 — Latent ideologies: a Bayesian Aldrich-McKelvey algorithm to compare voters and parties in the European Common Space

The numerical distribution of voters along the political scale determines to a great extent what kind of democracy will develop.

Downs, Anthony (1957, p. 121).
An Economic Theory of Democracy.

4.1 Introduction

The previous two chapters outline the theoretical and conceptual framework for estimating correct (i.e. comparable) positions for voters and political parties. This framework has five key elements. First, understanding that complex multidimensional concepts — such as the left-right ideology and the position towards European Union integration — are perceived differently by respondents, since they are interpreted using inherently subjective scales. Second, the direct comparability of left-right and EU integration positions among voters relies on the strong assumption of shared endpoints and distance metric. Third, the direct comparability of voters' positions with the positions of parties produced from external sources is undermined, as they impede separating position-images from position-perceptions, beyond referring to different measurement levels. Fourth, the direct comparability of policy positions across countries in comparative analyses relies on a strong equivalence assumption of shared country-specific endpoints and distance metric. Finally, all these potential sources of systematic measurement error may be correlated with our measures of political polarization, so that our inferences may reflect subjective perceptions instead of objective political polarization. In this chapter I develop a solution for the previous problems, moving from the theoretical problems to a feasible methodology. The procedure

can be defined as a two-stage Bayesian Aldrich-McKelvey procedure (2S-BAM) and it is outlined as follows.

In the first stage, I estimate Bayesian Aldrich-McKelvey (BAM) scaling algorithms to model voters' perceptions of party positions in each of the twenty-seven European countries in the sample (this is repeated over two consecutive EP elections in 2009 and 2014). By means of Markov-Chain Monte Carlo (MCMC) simulations, I sample the posterior distribution of voters' lateral shift and scale distortion parameters *together with* the political parties' ideal points' representing DIF-corrected positions.

In the second stage, I use the political groups in the European Parliament as *bridging information* to estimate, again using MCMC methods, country-specific distortion parameters together with DIF-corrected positions of the European Parliament's political groups. To do so, I develop a hierarchical version of the BAM algorithm allowing for the inclusion of a varying number of country-specific positions for each of the EP political groups.²⁰ The country-specific ideal points of party positions estimated during the first stage are thus modelled together with the bridging information to simultaneously produce the country-specific distortions and the ideal points of EP groups.

Finally, all voters and parties' positions are mapped on the Common European Space by means of linear transformations. This produces positional measures amended by incomparability problems.

The chapter proceeds as follows: I first present an overview of the Aldrich-McKelvey algorithm (4.2); next, I introduce the 2S-BAM procedure (4.3); then, I emphasize an important assumption of the model (4.4); next, I illustrate the relationships between 2S-BAM and other statistical models (4.5); and finally I explain the advantages of the Bayesian estimation framework (4.6).

4.2 The Aldrich-McKelvey scaling algorithm

The seminal contribution by Aldrich and McKelvey (1977) introduced a scaling model to correctly represent the positions of voters and political parties (or candidates). Since the

²⁰ A problem with the second stage of the model is that while each voter is asked to place each political party only once, in the second stage we can have more than one party for each group in the EP.

early years of survey analysis, voters' perceptions of parties' positions on issues have immediately attracted the attention of political researchers. This led to the diffusion of perceptual data, where respondents are asked to report the perceived positions of political actors, together with their own position, on specific political issues. The high variability in the perceived positions of parties and candidates, had led some public opinion scholars to conclude that voters were too uninformed to produce meaningful measures. In this debate, Aldrich and McKelvey suggested that: "at least part of the confusion that has been attributed to the voter may be attributable purely to methodological difficulties" (Aldrich and McKelvey 1977, 112).

The AM algorithm works with perceptual data rather than preference data. Yet, one could also recover an ordering among party positions by modelling preference data such as thermometer scores for candidates or parties by means of multidimensional scaling methods (MDS). The problem with this procedure is that the latent ordering is indirectly assumed, by imposing single-peakedness in voters' preferences distribution. Aldrich and McKelvey's contribution moved a step further, allowing us to *test* rather than to *rely on* this assumption.

The AM algorithm assumes that the stimuli, i.e. the items being positioned by survey respondents, such as political parties, hold a single fixed latent position in the issue space. Party homogeneity is the key assumption of AM scaling: there has to be a single position representing the actors. Then, to the extent to which party factions are strong enough to be perceived by the public, and when the public reports perceptions for different party factions mentioned by the interviewer, then the AM algorithm will produce biased estimates of the latent constructs.

This assumption, may be strong for some specific cases, but seems to be defensible on general terms. First, visible party divisions require quite strong conditions, such as: 1) different competing leaderships within the party with a different ideological stance; 2) the absence of a clearly-recognized majoritarian faction leading the party; and 3) the non-occurrence of a party split. In sum, even if we cannot exclude the possibility of a prolonged condition of joint party leadership, it is generally clear to the public who is in charge. In this sense I emphasize that 'homogeneity' refers to the existence of some perceived form of commonality or shared objectives rather than to the stronger sense of absence of internal variation.

Second, a milder situation of factionalism would not be an issue. Consider the example of a large catch-all party, divided internally between a majoritarian moderate faction and a minority more radical wing, in turn led by a clear leader and having some autonomous forms of organization, and which is not undergoing the process of splitting not to be electorally marginalized. Different groups of voters may form their perceptions with respect to the different factions. If this is the case, the information about the ideological positions of the various internal factions would be mixed. Yet, we would be estimating an average ideological placement and therefore this would not represent a problem unless the overall party ranking is affected. Going back to the initial air temperature example, this would correspond to the case where the temperatures are perceived by two respondents in the same city, but one respondent is located in a sunny downtown area and another lives closer to windy hills. Synthetic indices are better understood as averages among subgroups rather than as fixed parameters representing perfectly homogeneous entities. Moreover, the degree of internal heterogeneity is actually reflected empirically by the measures of uncertainty (i.e. the variance parameters of the distributions of party positions). The latter consideration helps justify the assumption in the context of the second stage, when building the Common European Space, I rely on the homogeneity of the EP groups.

Third, this assumption is preferable to the alternative which demands the absence of perceptions and subjectivity, and thus shared origins and distance metric within the electorate and across countries. To think that most, if not almost all, political parties are perceived as single entities seems more reasonable than thinking that the voters who report the same placement in two different countries imply the same political position.

Finally, and most importantly, the AM algorithm can detect the violations of these assumptions. As already pointed out (see section 2.3.2), the indication of a negative scale distortion parameter, which can be interpreted similarly to the discrimination parameter of a two-parameter IRT model, for a substantial number of voters would signal the anomaly and thus challenge party homogeneity. Similarly, a negative country-specific stretch parameter would signal the violation of the assumed homogeneity in the comparative application of the AM algorithm.

The AM scaling operates by exerting leverage on this assumption of party homogeneity (the existence of a single party position). By utilizing a single, albeit latent, party position as an

anchor, we can use voters' perceptions of party positions to reconstruct voters' subjective distortions, and to estimate voter-specific parameters. The interpersonal incomparability is then captured by modelling the unobserved individual perceptions as linear distortions of the observed reported perceptions. The linear distortion is a simple way to express the absence of a common metric: it allows a lateral shift parameter that in turn allows us to reconstruct the endpoints of the individual issue space, and it also includes a scale parameter modelling the extent to which individuals tend to stretch or compress the positions of the stimuli.

In the logic of the AM scaling, the raters (i.e. survey respondents) are assumed to express the position of the stimuli (political parties) in two sequential steps. In the first step, the true latent position of a political party j (say Y_j) is perceived by voters with a stochastic error:

$$Y_{ij}^* = Y_j + \varepsilon_{ij};$$

where: ε_{ij} satisfies the Gauss-Markov assumptions of zero mean, constant variance across individuals and stimuli, and zero covariance. In the second step, the voter reports the perception of the party projected in their own issue space:

$$Y_{ij} = a_i + b_i Y_{ij}^*;$$

where: Y_{ij} represents the position of political actor j as reported (e.g. in a survey) by voter i ; Y_{ij}^* is the latent (unobserved) position of stimuli j expressed directly in terms of the common (comparable) space, with $E(Y_{ij}^*) = Y_j^*$ for the stochastic error; b_i and a_i are the individual-specific perceptual distortions discussed in Chapter 2: the scale parameter b_i captures the effect of distortions in the distance metric, while the lateral shift/location parameter a_i captures the effect of latent shifts of the origin of the scale.

Researchers generally observe Y_{ij} , but proceed as if they have observed Y_{ij}^* , with the result of conflating the two distortions in the measure of party position. Differently, we need to first estimate these distortion parameters. Only then we can obtain the DIF-corrected perception,

simply by operating backwards with a linear transformation. In fact, the previous expression can be equivalently stated in terms of the latent scores: $Y_{ij}^* = \frac{1}{b_i}(Y_{ij} - a_i)$.

Analysts of voting behaviour routinely include issue scales in their models directly, without previously estimating these individual distortion parameters. Yet it is clear that this is equivalent to estimating the effects of issue positions by implicitly assuming that all the individuals' subjective scales share a common origin, i.e. $a_i = 0$ for all voters i , and that the subjective distances between positions share the same metric, i.e. $b_i = 1$ for all $i \in \{1, \dots, N\}$. In the second stage of the procedure, I adapt the same logic to estimate country-specific distortions: we can think of the latent party scores produced in the first stage, Y_j^* , as DIF-inflated country-specific positions: unless we are able to re-scale these scores, we should not compare them directly across countries. Then, following a strategy proposed in Lo *et al.* (2014), we can extend the assumption of party homogeneity to the European Parliament's political groups, and use EP groups as anchors to estimate country-specific DIF-distortions. To this end, we model the country-specific party ideal points in the same way we previously modelled voters' perceptions:

$$Y_j^* = Y_{mk}^* = c_k + d_k Z_m^*;$$

where: j indexes political parties, m indicates EP political groups, and k the EU member states. The left-hand of the equation clarifies that the ideal points produced in the first stage become the 'perceptual data' modelled in the second stage. The two distortion parameters c_k and d_k are interpretable as usual, but this time refer to the latent shift and scale distortions of the EU member states. Finally, Z_m^* represents the latent position of the EP political groups on the European Common Space. Again, all the parameters are produced simultaneously by the estimation process, and the DIF parameters allow us to proceed by linear transformation to map all voter and party positions from the various countries onto the same common space. At this point, we may ask why the AM solution has not been used a great deal until recently. There are several reasons for this. First, the AM algorithm was originally implemented using the Fortran (Formula Translation) programming language developed by IBM in the 1950s. Only recently has a version of the AM scaling algorithm been available for more popular

programming languages.²¹ This meant that the Aldrich-McKelvey algorithm was not readily available for most applied political scientists. Second, the problem of scale incomparability was underappreciated in the past due to the context of relatively low political polarization that characterized Europe between the 1980s and the Great Recession (2007-2009). It was only after the recent rise of radical populist parties that polarization has attracted the attention of researchers in the form of a more structured debate involving systematic quantitative assessment (Abramowitz and Saunders 2008; Alvarez and Nagler 2004; Dalton 2008; Fiorina and Abrams 2008; McCarty, Poole and Rosenthal 2008). Third, another account of the delay is related to some key limitations in the original version of the algorithm. In fact, the original implementation of the AM scaling model did not allow missing values in the reported perceptions, nor estimation of standard errors of items' positions. Standard errors of party positions could have been estimated using a nonparametric bootstrap procedure, but it was not possible to produce uncertainty measures for the voters' parameters. In fact, the estimation of individual uncertainty is still unfeasible in a frequentist setting, and this is one of the motivations for preferring a Bayesian AM, in which inferential uncertainty measures are naturally produced by simulation (section 4.6).

4.3 Retrieving a European Common Space: the two-stage Bayesian Aldrich-McKelvey procedure

Having summarized the internal logic and the functioning of the 2S-BAM procedure, I can now describe the empirical strategy in more technical terms.

The first stage, a country-by-country Bayesian implementation of the AM algorithm, is an adaptation of the model developed for the United States in Hare, Armstrong, Bakker Carroll *et al.* (2014). In the second stage, I follow the strategy described in Lo, Proksch and Gschwend (2014) and exploit the membership of national political parties in the European Parliament's political groups to bridge party systems and build a European Common Space. To this end, I

²¹ The `basicspace` package (Poole, Lewis, Rosenthal, Lo *et al.* 2016), hosted on the Comprehensive R Archive Network, offers an R implementation of the Blackbox estimator developed in (Poole 1998). This includes the `blackbox()` function that estimates raters' ideal points and two issue-specific item parameters on the basis of the positions on a set of issue scales, and the `blackbox_transpose()` function that retrieves rater-specific distortion parameters. The AM scaling model I present can also be thought of as a (two-fold) Bayesian implementation of the latter function.

develop a hierarchical adaptation of AM scaling. The hierarchical BAM model I propose allows: 1) including cases with country-level missing values, i.e. countries missing a national party for one or more EP groups; 2) computing estimates of the positions and related uncertainty measures for EP political groups, including two groups of Non-Inscrits; and 3) estimating uncertainty measures for the country-specific shift and stretch distortion parameters, which is not allowed in a frequentist procedure developed in Groseclose, Levitt and Snyder (1999) and applied in Lo, Proksch and Gschwend (2014).

Section 4.3.1 describes the first stage of the 2S-BAM procedure and section 4.3.2 deals with the second stage.

4.3.1 Recreating country-specific basic spaces to achieve DIF-corrected party positions

Let $j = \{1, \dots, J\}$ index the stimuli (i.e. political parties), whose positions are rated by individual voters, indexed with $i = \{1, \dots, N\}$, in terms of a political scale. For illustrative purpose, we consider ideology as measured with a scale defined as ranging from 0 to 10, where 0 means 'left' and 10 means 'right'. Therefore, let $y_{ij} \in \{0, \dots, 10\}$ represent the set of possible positions of party j by voter i .

In the first step, voter i elaborates an unobserved perception y_{ij}^* of the latent ideological position of party j . From a fully Bayesian perspective this single objective position of the party is conceived as a probability distribution. Then, voters' latent perceptions of party j 's position are assumed to be randomly distributed around this latent party position:

$$(4.1) \quad y_{ij}^* = y_j^* + \varepsilon_{ij};$$

where: ε_{ij} is a random component satisfying the Gauss-Markov conditions, and y_j^* represents the latent position of party j .

In the second step, the voter reports the latent perception in terms of a subjective latent space. This means that their perceptions are subject to pre-specified origins and distance metrics. Thus, what is observed is y_{ij} , which is assumed to be distributed as follows:

$$(4.2a) \quad y_{ij} \sim N(\mu_{ij}, \sigma_{ij}^2); \quad \sigma_{ij}^2 > 0$$

$$(4.2b) \quad \mu_{ij} = a_i + b_i y_j^*; \quad a_i, b_i, y_j^* \in \mathbb{R}$$

$$(4.2c) \quad \sigma_{ij}^2 = \sigma_i^2 \sigma_j^2.$$

Where: μ_{ij} is the mean of the observed survey responses, modelled as a function of three latent quantities; a_i and b_i are two latent scale distortions, with a_i representing a location parameter, and b_i a the scale parameter; y_j^* indicates the latent position of party j on the basic space (ideal point); finally, σ_{ij}^2 represents heteroskedastic-robust variance terms (Lauderdale 2010) capturing the dispersion around the mean of individual and party parameters.

Larger (smaller) a_i implies that respondent i shifts the ideology space towards the right (left) side. The latent slope b_i signals the change in voters' perceived positions associated to a marginal change in the latent position of party j . This means that larger (smaller) b_i coefficients imply that a unitary increase in the ideal points — i.e. an objective change, of the same size for all voters — produce a stretching (compression) effect in the perceived positions of that party for voter i . The variance term σ_{ij}^2 in (4.2c) is defined as the product between the individual uncertainty about party locations σ_i^2 and the ideological ambiguity σ_j^2 of the party itself. This specification implies a larger number of parameters to be estimate, but it has the crucial advantage of being robust to heteroskedastic errors (Lauderdale 2010). Having specified the model, we can now compute the likelihood function, which is given by the following equation:

$$(4.3) \quad \mathcal{L} \equiv p(\mathbf{Y}|\boldsymbol{\theta}) \propto \prod_{i=1}^N \prod_{j=1}^J \phi\left(\frac{y_{ij} - a_i - b_i y_j^*}{\sigma_{ij}^2}\right).$$

Where: \mathbf{Y} is the $[N_k \times J]$ matrix of observed party placement on the left-right scale, $\boldsymbol{\theta} = \{\boldsymbol{\alpha}, \boldsymbol{\beta}, \mathbf{y}^*, \boldsymbol{\sigma}\}$ indicates the latent parameters, and $\phi(\cdot)$ is a standard normal density.

The importance of the discrimination parameter (b_i)

Before defining the estimation strategy, I would like to stress certain aspects of the latent scale parameter. As already mentioned, the scale distortion parameter is equivalent to the item discrimination parameter in a two-parameter IRT model. In the context of latent ideology of legislators measured with a matrix of roll-call of votes (as in Poole and Rosenthal 1997), it would capture the extent to which a certain legislative bill discriminates among legislators. In our context, it captures the extent to which a certain voter i is able to discriminate among party positions. When voters place all the parties on the same ideological position, the coefficient approximates zero. This means that, for these voters, parties are not differentiated in ideological terms. Therefore, the b_i coefficient is an important source of heterogeneity in the electorate, and can be informative in terms of what type of voter is i . In particular, hypothesis H5 links this form of scale distortion to voters' political sophistication.

However, if a substantial number of voters do not perceive differences among parties, then this would become a different type of issue (Jackman 2001, 229). In fact, b_i also contains information on the content of the underlying dimensionality of the political space: when it is approximately zero for a substantial share of voters, this may imply that political parties are truly locating on the same position of that scale. If this is the case, then it should not necessarily imply that political parties are no longer competing, or that they are involved in valence competition: it could signal that they are competing somewhere else, on a latent dimension that we are not measuring. This is a crucial advantage of the AM approach: if the relevant dimension in the political space is missing the model will tell us; in case the left-right and the EU integration dimensions are not truly perceived in the minds of respondents, the model will tell us.

Moreover, it could be the case that a subgroup of voters systematically misunderstands the ranking of political parties. If a voter perceives parties in the wrong order, e.g. placing a party of the left to the right of a centrist party, then the b_i would become negative. As far as a few voters will display negative stretch coefficients, this may suggest that this small group of voters is very uninformed about politics (see hypothesis H5). However, if a substantial share of voters is placing the two parties on the other way around (e.g. party A to the left of party B when the ideal point of party A lies to the right of party B), this would signal that part of the electorate is systematically misperceiving the position of party A. This is likely to occur if the

party homogeneity assumption is violated: a part of the electorate may be rating a different component, although defined under the same label. Again, this is important because it is a tool to detect potential violations of the core assumption of the scaling procedure.

In psychometric research, as in the classic problem of measuring latent abilities of test-takers, the item distortions are normally treated as nuisance parameters. In fact, the only practical meaning of a negative discrimination parameter would be that the specific item had been poorly specified: in that context, a negative value for the discrimination parameter generally indicates that test-takers are failing the easier test items and succeeding with the harder ones. This corresponds to situations such as a test presupposing a wrong answer, with very intelligent test-takers being aware of the correct one. Therefore, discrimination parameters are often conventionally assumed to be semi-positive (i.e. assuming lognormal prior distribution in a Bayesian setting). Nevertheless, as we can see in equation (4.2b), I avoid this constraint and leave the discrimination parameter unconstrained both for voters (first stage) and for countries (second stage), therefore allowing it to potentially assume negative scores.

Identification

The main problem of the previous model — and more generally of IRT and latent traits models — is that it is inherently unidentified (Clinton, Jackman and Rivers 2004; Fox 2010; Jackman 2001). Identification problems (Manski 1995) occur when multiple sets of parameters explain the data equally well.

In our case the identification issue stems from the attempt to build a measure in an unconstrained latent space. In particular, we have to address three different sources of indeterminacy: an additive invariance, a scale invariance, and a reflexive invariance. In the first place, the reader should notice that a simple constant could be added to a_i and subtracted from y_j^* , and the model would still produce the same probability for party positions: $\phi(a_i + b_i y_j^*) = \phi(a'_i + b_i y_j^{*'})$; with $a'_i = a_i + c$; and $y_j^{*' } = y_j^* - c$. This means that the parameters a_i and y_j^* would not be identified. In the second place, c could be an offset constant such that: $\phi(a_i + b_i y_j^*) = \phi(a_i + b'_i y_j^{*'})$; where $b'_i = b_i \cdot c$; and $y_j^{*' } = y_j^*/c$, leading to unidentified b_i and y_j^* parameters. Finally, we should also notice that even if the

additive and multiplicative invariances are addressed, we would still obtain: $\phi(a_i + b_i y_j^*) = \phi(a'_i + b'_i y_j^{*'})$, if $a'_i = -a_i$; $b'_i = -b_i$; and $y_j^{*' } = -y_j^*$.

These three types of scale invariance problems are known as additive, multiplicative, and reflection (or polarity) invariance or aliasing (Bafumi, Gelman, Park and Kaplan 2005). To address these issues, I follow Treier and Jackman (2008) imposing normalization and polarity on the item distributions. The normalization is achieved through an appropriate re-parameterization. This means that all party ideal points are expressed in terms of a standard-normal metric.

In particular, the normalization operates as follows:

$$y_j^{*' } = (y_j^* - \bar{y})/\sigma_y;$$

where: $y_j^{*' }$ represents the standardized ideal points; y_j^* the unstandardized ideal points; $\bar{y} = \sum_1^J y_j^*/J$ is the mean of political parties' ideal points; and $\sigma_y = \sqrt{\frac{1}{J} \sum y_j^* - \bar{y}}$ their standard deviation. As a consequence, I also have to compute an appropriate transformation of the voter-specific parameters, to be expressed in terms of the standard-normal metric. This leads to the following:

$$a_i^* = a_i + b_i \cdot \bar{y};$$

$$b_i^* = b_i \cdot \sigma_y.$$

Where: a_i^* and b_i^* are the standardized individual distortions; and again \bar{y} and σ_y respectively the mean and the standard deviation of y_j^* .

Prior distributions

Having addressed the additive and multiplicative invariance, we can now tackle the issue of reflective invariance. I do so indirectly, picking appropriate prior distributions for the party ideal points. Before going into detail, I present the prior distributions for the individual distortion parameters. I follow Jackman (2001) and specify fairly uninformative priors:

$$(4.4) \quad a_i \sim N(0, 25);$$

$$(4.5) \quad b_i \sim N(0, 25).$$

A completely uninformative alternative would have been to set e.g. $a_i \sim U(-100, 100)$. Weakly informative priors have the advantage of accommodating the estimation procedure while ruling out implausibly extreme distortion parameters. A gamma prior can be specified for the scale parameters in case we want to exclude negative values. These normal priors suffice to obtain local, but not global, identification (this is the consequence of the reflective invariance). The last source of indeterminacy depends on the fact that parties could be placed on the basic space in their mirror-image rank-order. To some extent, this represents a minor issue. In fact, in a context of a single country it could simply be resolved at face validity: when the parties of the left appear having positive ideal points and vice versa, then we may simply multiply the scale distortions and the ideal points by -1 . One way to solve this polarity issue is to introduce a sign restriction, usually picking one ideologically extreme party and assigning the desired value (e.g. -1 for a radical left party).²² Another way to induce polarity is to truncate the distribution in such a way as to incorporate prior knowledge about the ideological side of party stimuli. I have chosen to address the polarity issue by setting appropriate priors on the party ideal points. This choice is also motivated by the comparative setting and the fact that I had to code the parties in terms of the different electoral blocks identified in Chapter 2.

This is an advantage that political scientists have over psychometrics researchers. The latter generally have no available information about the item parameters, and a common distribution is most often the chosen approach. In contrast, political scientists can use their substantive knowledge of political parties' ideological stances.

Thus, I embrace unambiguous substantive knowledge of the profile of political parties by modelling the priors as truncated standard normal densities:

$$(4.6) \quad y_{jL}^* \sim N(0, 1) \quad \mathbf{1}(-\infty, 0);$$

²² An alternative, as in (Hare, Armstrong, Bakker, Carroll *et al.* 2014), is to not impose the normalization on the scale, but to pick two parties to set at arbitrary values. In this case a good choice would be to select the most extreme-left and the most extreme-right parties. In fact, due to the bimodal shape of the likelihood function, picking more moderate parties may not suffice to select the right side of it.

$$(4.7) \quad y_{jR}^* \sim N(0, 1) \quad \mathbf{1}(0, +\infty).$$

Respectively for unambiguously left-wing (i.e. socialist and communist) and right-wing (conservative and nationalist) parties. Since this is sufficient to induce the polarity, I let the remaining centrist parties (moderate, liberal democrats party families and post-ideology kind of parties) follow non-truncated normal distributions:

$$(4.8) \quad y_{jC}^* \sim N(0, 1).$$

Overall, this prior specification of party positions: 1) sets the scale of the metric, by fixing the variance of ideological positions to one; 2) centres the distribution of party positions at zero; and 3) eliminates the reflection invariance through the appropriate truncations. Alternative identification strategies (e.g. setting a 'standard voter', e.g. with $a_1 = 0$ and $b_1 = 1$, thus practically setting the distance metric with respect to voter 1; or fixing the values of two extreme parties in every country, etc.) are avoided mainly as a matter of personal taste and preference. We could also specify free hyperparameters for party positions and rescale the parameters at each MCMC iteration, but while this identification procedure would be allowed in Bilog MG, it is not implemented in WinBUGS and JAGS, and thus I also avoid it.

Finally, priors are set for the variance components. As recalled, estimating both individual and party-specific variance components allows for heteroskedastic errors. The classic prior for the normal distribution variances would be an Inverse Gamma distribution with very small parameters (see also Hare, Armstrong, Bakker, Carroll, and Poole 2014). However, this is known to produce convergence problems (Gelman 2006). I have also experienced convergence and mixing difficulties when assigning inverse-gamma priors. This depends on the fact that inverse-gamma priors approach to an improper distribution for low values of the parameters (such as $\epsilon = 0.1$), especially considering the small number of parties in some countries (Gelman 2006). Thus, I decide to follow one of Gelman's (2006) suggestions, and to opt for truncated-uniform variance priors:

$$(4.9) \quad \sigma_i^2 \sim U(0, 100);$$

$$(4.10) \quad \sigma_j^2 \sim U(0, 100).$$

Weakly informative half-Cauchy priors would have been another feasible solution.

Assuming prior independence, and denoting prior density with $p(\boldsymbol{\theta}) = p(\alpha, \beta, y^*, \sigma^2)$, we can express the joint posterior simply via Bayes rule:

$$(4.11) \quad \pi(\boldsymbol{\theta}|\mathbf{Y}) \propto p(\boldsymbol{\theta}) \cdot p(\mathbf{Y}|\boldsymbol{\theta}).$$

Voters' ideal points

Once all individual DIF distortion parameters and party ideal points have been simultaneously sampled from the posterior distributions, for each of the countries in the study, I add an additional step to find voters' ideal points. Having estimated voters' distortion parameters, basically means that we have learned their subjective view of the ideology space. Then, we now map anything they place on that scale in terms of a common space where all voters' positions are comparable. This is done with a simple linear transformation of the self-reported left-right placement. Therefore, we finally compute voters' latent ideal points introduced at the beginning of our discussion in Equation 4.1 through the following:

$$(4.12) \quad y_i^* = \frac{y_i - a_i}{b_i}.$$

Where y_i represents voter i self-placement on the scale (i.e. self-reported left-right for the first dimension, self-reported position towards EU integration for the second one). Having tackled the issue of interpersonal incomparability, we can now extend the model to further address the problem of cross-country incomparability, as discussed in the next section.

4.3.2 The European Common Space: bridging party systems

The first stage of the 2S-BAM model provides a set of country-specific basic spaces for the European countries in the sample. This means that we can now meaningfully compare voters as well as political stimuli on the same common metric, but only within in the same country.

The logic of the model should now be clear, and the second stage of the 2S-BAM procedure is basically a second application of the same logic to bridge countries rather than individuals. To this end, we need to estimate country-specific distortion parameters which allow us to recover the European Common Space that enables comparisons. The missing link is found by using the membership of national parties in the political groups of the European Parliament as bridging information, a strategy that has been proposed in (Lo, Proksch and Gschwend 2014).

Let $k = \{1, \dots, 27\}$ represent the set of EU member states, and $m = \{1, \dots, M_t\}$ indicate the set of political groups in the European Parliament. Then, we can think of the political party ideal points (y_j^*) as DIF-inflated country-specific positions. I replace the notation of these scores from y_j^* to z_{jkm} to stress that the same quantity that was previously conceived as a parameter to be estimated is now considered as data (i.e. the position of party j , member of the of the m -th EP group, in country k). We can model z_{jkm} as follows:

$$(4.13a) \quad z_{km[j]} \sim N(\eta_{km[j]}, \sigma_{km}^2); \quad \sigma_{km}^2 > 0$$

$$(4.13b) \quad \eta_{km[j]} = c_k + d_k z_m^* + \varepsilon_{km}; \quad c_i, d_i, z_m^* \in \mathbb{R}$$

$$(4.13c) \quad \sigma_{km}^2 = \sigma_k^2 \cdot \sigma_m^2.$$

Where: $j = \{1, \dots, J_k\}$ indexes national political parties, $k = \{1, \dots, K\}$ indexes countries, and $m = \{1, \dots, M_t\}$ indexes EP political groups in the two EP legislatures considered (2009 and 2014 elections). Moreover, η_{jkm} represents the mean of the distribution of the ideal points, and is modelled as a function of three latent parameters: c_k is a country-specific lateral shift distortion parameter; d_k is a country-specific stretch distortion; and ε_{jkm} is a random error term satisfying the Gauss Markov conditions. The term σ_{km}^2 represents heteroskedastic-robust variances capturing the dispersion around the mean of the parameters.

All considerations presented in the previous subsection with reference to voter-specific parameters are applicable to country-specific parameters. Similarly, all considerations made with respect to party-specific ideal points are now directly applicable to the EP groups' ideal points. For instance, the latent shift parameter c_k is interpretable as the latent lateral shift in

the origin of the basic space of country m with respect to the European Common Space. Thus, positive (negative) c_k imply a latent shift towards the left (right) for country m .

The only visible difference with the previous individual-level application relates to the indexing. In fact, the second stage relies on a hierarchical version of the BAM algorithm. The reason is straightforward: voters are asked to place each party only once, but in certain countries there is more than one party belonging to the same EP group. This means we need a specification that allows for the inclusion of more than one party for each EP group. An easier solution would be to select the largest party among those which belong to the same EP group in the same country. I reject this simplification on the grounds that it would create a systematic bias if the additional parties are associated with systematic features (e.g. characterized by more extreme positions). Moreover, a hierarchical adaptation of the AM model can be a useful extension in other settings. Thus, I preferred to explicitly consider party positions as nested within countries and within EP groups. This is indicated through the notation with nested indexing: $km[j]$.

The likelihood function is given by:

$$(4.14) \quad \mathcal{L} \equiv p(\mathbf{Z}|\boldsymbol{\theta}) \propto \prod_{j=1}^{J_k} \prod_{k=1}^K \prod_{m=1}^M \phi\left(\frac{z_{km[j]} - c_k - d_k z_m^*}{\sigma_{km}^2}\right).$$

Where: \mathbf{Z} is the $J_K \times M_t$ matrix of observed party placement on the left-right scale, $\boldsymbol{\theta} = \{\boldsymbol{\gamma}, \boldsymbol{\delta}, \mathbf{z}^*, \boldsymbol{\sigma}\}$ represents the latent parameters, and $\phi(\cdot)$ is a standard normal density. As explained in the last section (4.6), MCMC simulations easily allow for the inclusion of missing values, i.e. the values of those EP groups for which no national party is member of in a given country.

Identification

The discussion made in the previous section, regarding the additive, multiplicative and reflexive aliasing, also applies here: the second stage specification will also not be identified. As I follow the same procedure, the reader can refer to the previous subsection for a detailed explanation: in the second stage I also opt for the standard-normal as the re-parameterization that sets the metric of latent positions. I thus practically thus practically

estimate $z_m^* = (z_m^* - \bar{z})/\sigma_z$; where \bar{z} is the mean of the EP groups' ideal points, and σ_z represents their standard deviation.

Prior distributions

In analogy with the first stage of the model, I use not completely uninformative priors for the country-specific distortions:

$$(4.15) \quad c_k \sim N(0, 25);$$

$$(4.16) \quad d_k \sim N(0, 25).$$

As with the previous case, I also rely on truncated standard-normal distributions as EP groups' priors:

$$(4.17) \quad z_{mL}^* \sim N(0, 1) \quad \mathbf{1}(-\infty, 0);$$

$$(4.18) \quad z_{mR}^* \sim N(0, 1) \quad \mathbf{1}(0, +\infty).$$

$$(4.19) \quad z_{mC}^* \sim N(0, 1).$$

Where: z_{mL}^* are unambiguously left-wing EP political groups; z_{mR}^* are unambiguously right-wing EP groups, and z_{mC}^* are centrist EP groups.²³ Finally, the priors for variance distributions are given by:

$$(4.20) \quad \sigma_k^2 \sim U(0, 100);$$

$$(4.21) \quad \sigma_m^2 \sim U(0, 100).$$

²³ The priors uniquely affect the reflexive invariance, and thus they don't numerically affect the estimates. These are the groups that were considered. Left-wing EP groups include: the Confederal Group of the European United Left – Nordic Green Left, the group of the Greens/European Free Alliance, and the Group of Progressive Alliance of Socialists and Democrats. Right-wing EP groups are considered the group of the European People's Party, the European Conservative and Reformists, Europe of Freedom and Direct Democracy, and Europe of Nations and Freedom. The Alliance of Liberal and Democrats has unconstrained prior distribution. Non-Inscrit parties are split into two groups: the non-inscrits of the left and the non-inscrits of the right. In terms of the second dimension, the pro-European EP groups are the Progressive Alliance of Socialists and Democrats, the People's Party, the Alliance of Liberal and Democrats. The anti-EU groups include: Non-Inscrit parties of the left and of the right, the European United Left, Europe of Nations and Freedom, and Europe of Freedom and Democracy. The European Conservative and Reformists and the European Greens/Free Alliance are specified with untruncated priors.

Therefore, again assuming prior independence and defining the prior density as $p(\boldsymbol{\theta}) = p(\gamma, \delta, z^*, \sigma^2)$, we can finally obtain the joint posterior via Bayes rule as:

$$(4.22) \quad \pi(\boldsymbol{\theta}|\mathbf{Z}) \propto p(\boldsymbol{\theta}) \cdot L(\mathbf{Z}|\boldsymbol{\theta}).$$

Ideal points on the European Common Space

Using simple linear transformations, we can now map all country-specific latent positions into fully comparable value mapped on the European Common Space. These country-specific values include both voters' ideal points y_i^* , previously computed by means of the linear transformation indicated in Equation 4.12, and the political parties' ideal points:

$$(4.23) \quad z_j^* = \frac{z_{jk} - a_k}{b_k}.$$

Where: z_{jk} are the political parties' country-specific ideal points estimated in the first stage; a_k and b_k represent the country-specific shift and scale distortion parameters.

Obviously, we may also want to translate the positions of the median voter \tilde{y}_k in each country, to compare electorates. Furthermore, we could also transform the entire distribution of voters in each country and create a directly comparable distribution of European voters. Finally, we can compute a weighted average of political parties' ideal point and produce comparable positions of the centre of European party systems. Once the parameters a_i , b_i , c_k , and d_k are produced, we can finally retrieve the European Common Space and compare comparable scores.

4.4 Mapping the second dimension: the assumption of separability

In the light of the theory presented in Section 2.4, we want to understand which of the two considered underlying political dimensions actively structures European electoral competition. Therefore, the entire 2S-BAM procedure has been separately estimated for both the left-right and the EU integration dimensions.

The reader must be aware that this is not an easy choice. In fact, by re-estimating the model separately on the pro/contra EU scale, I am implicitly assuming the *separability* of voters'

preferences. I here make this assumption explicit, acknowledging that this could represent a limitation this study. The choice is primarily motivated by the estimation and computational difficulties that relaxing this assumption would imply.

The theory of spatial voting (Enelow and Hinich 1984) already includes the theoretical infrastructure needed to consider non-separable preferences, and by the time I revised this work a first empirical application had been produced that took this into account (see Stoetzer and Zittlau 2015). Non-separability could represent a promising expansion of my approach. This said, Stoetzer and Zittlau (2015) show evidence of a statistically significant, but substantially negligible effect of non-separability on voting decisions (see Figure 3 in the online appendix of their paper). Moreover, we should then allow for the possibility of heterogeneous country-specific varying degrees of non-separability. For this reason, it would probably be wiser to experiment non-separability in separate settings first, and this comparative setting does not seem to be the ideal occasion to undertake such a research task. Finally, in substantive terms non-separability of preferences basically implies that the policy packages are not independent. This means that in case both policies are implemented, voters would receive more utility than the sum of utilities from the two packages considered separately. This is the case of coffee and sugar: we are much happier if we have both. Are left-right ideology and the integration/demarcation dimension a complementary policy pair such as coffee and sugar?

While additional considerations involving this potential expansion are reported in Section 7.4, the task of including cases of non-separability goes beyond the scope of the study. In conclusion, while I acknowledge that this is a perspective worth exploring, I prefer to rely on separable preferences.

4.5 Relationships with other statistical models and the mathematical roots of the Aldrich-McKelvey algorithm

The Aldrich McKelvey scaling algorithm allows researchers to estimate scale heterogeneity parameters and to define a common metric, which enables them to measure the constructs of of interests meaningfully (i.e. with directly comparable and interval-values). The AM

model has connections with a variety of statistical techniques and, importantly, with substantive theories across the social sciences.

AM scaling as a latent-variable model

In the first place, the AM model can be seen from the perspective of latent variable modelling. Classic cases of latent variable models are binary dependent variable models, where a latent variable y^* is seen as the unobservable construct underlying the observable manifestations $y_i = 0$ if $y_i^* \leq 0$ and $y_i = 1$ otherwise. In this sense, the AM model explicitly allows party positions to be ‘noisy’, i.e. to incorporate systematic error that can be estimated and subsequently corrected. (Treier and Jackman 2008) introduced an ordinal version of this model (operationalizing democracy as a latent variable) in a way that allowed for the correction of such ‘errors-in-variables’ problems. Failure to acknowledge sources of systematic errors is likely to lead to inconsistent estimates and invalid statistical tests. In our case, the source of systematic error lies in individuals’ perception biases, that are estimated and taken into account for the inference.

AM scaling as random-effects model

The 2S-BAM model can be seen as a hierarchical random effects model. In particular, it consists of a cross-classified multilevel model on three levels. In the first stage of the model, the individual country-specific stage, the item responses are nested within individual respondents and within political parties (creating the cross-classification). Thus, we can consider that the individual distortions and the political parties’ ideal points are in fact random effects. In the second stage the same cross-classification occurs with political parties’ ideal points being nested within countries and EP political groups. Although this path is not explored in this analysis, country-level information could be included as additional higher-level covariates in the first stage.

In contrast to standard applications of random-effects models — where random effects are either random intercepts, or random slopes resulting from interaction with an observed covariate — in our application we model an individual-level random slope as interacting with another latent covariate (the ideal points representing the positions of political parties). From a similar perspective, we may also consider that in the classic random effects’

framework it is generally assumed that higher-level random coefficients are mutually-independent and distributed according to a common density. The model presented in this chapter can be considered a random effects model that relaxes additivity, since voters are not considered mutually-independent, but are independent conditional on scale heterogeneity. As pointed out in Rozenas (2013), if we simplify the AM model to assume that $b_i = 1 \forall i \in \{1, \dots, N_K\}$ and $\sigma_j^2 = 1 \forall j \in \{1, \dots, J_K\}$, then the AM model would be reduced to a simple linear random-effects model with random intercepts at the individual level. Furthermore, for $\sigma_j^2 = \sigma \forall j \in \{1, \dots, J_K\}$, then the model would be the classic AM, i.e. without heteroskedastic-robust variances. Finally, for $\sigma_j^2 = 1 \forall j \in \{1, \dots, J_K\}$ the model would be reduced to the multiple-rater model (Johnson and Albert 1999).

AM scaling from a factor-analytic perspective

The AM scaling is also appreciated for its similarity to Factor Analysis. This consideration broadly applies to the whole class of IRT models. In particular, the model would be similar to a CFA where the observed indicators are represented by the reported perceptions of political parties' positions, and the latent factors, whose number is known and is equal to the number of parties in the country, are represented by the party positions. Thus, the factor loadings in the correlations matrix would be similar to the scale distortions parameters.

One important difference between the two approaches is the fact that in the factor analysis' framework we would lack the individual shift distortion, and we would thus only consider the scale distortion parameters. Another major difference involves the completely divergent perspective between the two approaches, as factor analysis is a model of correlations, and not of individual-level responses. This means that all the information about individual means and variances is discarded in factor analysis, making it impossible to obtain the simultaneous estimation of items and raters' parameters from the correlation matrix. Moreover, the latent factor is generally conceived as an unobserved variable that we wish to explain, rather than — as is the case in our application — as a set of parameters of interest that we want to estimate.

AM scaling as an Item-Response Theory Model

The AM model also fits in the tradition of IRT models (Item-Response Theory Models) that have developed since the early nineteenth century. Historically speaking, the traditional application of IRT models has been rooted in psychometrics, and in particular in the estimation of the ability of test takers. Tests in IRT models' applications are often presented in dichotomous form, and thus dichotomous observable indicators are the most common type of manifest indicators (i.e. true/false). Poole and Rosenthal's (1997) seminal work has assimilated this tradition into political science, converting models used to estimate ability to models for estimating ideology.

AM scaling fits as an adaptation of these models to measure ideal points through perceptual data. In classic IRT applications, the model would map a set of dichotomous items into an interval-valued latent variable which measures the construct of interest. The AM model instead proceeds from ordinal or continuous observable indicators to produce interval-valued latent scores.

An important distinction is the different role played by individuals: in IRT models, the individual (test-taker) is seen as the main target of the inference so that individuals' ideal points are considered as the main outcome of the model, while the two item parameters — the difficulty parameter corresponding to the latent lateral shift, and the discrimination parameter corresponding to the latent scale distortions — are largely seen as nuisance parameters. In the context of AM scaling of perceptual data both individual-rater and party-item parameters are important outcomes. Indeed, one of the most appreciated features of the model is that we can estimate both sets of parameters simultaneously. The reader can observe how the AM algorithm is similar to a 'flipped' IRT model, as the individuals correspond to the items, and not to the test-takers as in the IRT setting. Thus, our latent shift and stretch individual parameters are in analogy with the item-specific difficulty and discrimination IRT models' parameters. Similarly, political parties would be seen as 'raters' from the perspective of the AM scaling, while they would be treated as 'items' in an IRT model.

Connection with spatial voting theory

Finally, it is important to highlight the deep connection between the Aldrich-McKelvey model and the spatial theory of voting (Davis, Hinich, and Ordeshook 1970; Downs 1957 chapter 8; Enelow and Hinich 1984, section 4.12). To better appreciate this relationship, I report the

bi-dimensional model of voters' perceptions as developed in Enelow and Hinich (1984, p. 57):

$$\theta_i = (\theta_{i1}, \theta_{i2}) = (b_{i1} + v_{i11}\pi_{\theta1} + v_{i21}\pi_{\theta2}, b_{i2} + v_{i12}\pi_{\theta1} + v_{i22}\pi_{\theta2});$$

where: the b_i coefficients represent the perception of the incumbent's position in terms of policy 1 (b_{i1}) or 2 (b_{i2}), and the v_i coefficients represent the change in the perceptions of the incumbent's position linked to a marginal change in the underlying predictive dimensions. In our case, we adopt the simplification assumption — also invoked by Enelow and Hinich — that sets the substitution rates across dimensions (e.g. v_{i21}) to zero (this is what implicates separability, see sections 4.4, 7.4 and 7.5). Nevertheless, the reader can still appreciate the theoretical roots of AM scaling from the equation.

4.6 The advantages of the Bayesian approach to latent variable modelling

The estimation procedure in the classic frequentist AM scaling and in the BAM clearly differs. In the classic AM algorithm, the solution is to compute the ideal points of the stimuli by minimizing the least squares under a normalization constraint of the ideal points: $\sum_{j=1}^J y_j = 0$ and $\sum_{j=1}^J y_j^2 = 1$, included in the system of equations via Lagrangean multipliers (Aldrich and McKelvey 1977). As mathematics shows, applying the singular value decomposition solution proposed in (Eckart and Young 1936), the individual latent parameters basically reduce to the least-squares regression of observed perceptions on the principal component solution for the latent positions of the stimuli. In a Bayesian framework, both the individual distortion parameters and the ideal points for the stimuli are estimated simultaneously, sampling from the same joint posterior distribution. Notwithstanding this, the two-step logic of the AM model is also basically intact in its Bayesian version.

As already mentioned, the classic AM algorithm does not allow for missing values. This means that if a voter reports even a single 'Don't know' response, then all their perceptions have to be discarded. Most importantly, in the second stage of a hypothetical 2S-AM, this would not allow for the inclusion of any country whose national political parties are not members of *all* the EP groups. A generalized AM scaling model that allows for the inclusion of missing values

was later developed in (Poole 1987): by means of Alternating Least Squares technique, the non-missing elements of the matrix of individual perceptions are used to estimate the lower rank approximation of the entire matrix (Poole 1998, 956). The solution in this case is to minimize an objective function of the squared deviations in the cells of the matrix containing voters' perceptions. Then, two restrictions can be introduced via Lagrangean multipliers: the condition of orthogonality between the $[N \times 1]$ vector of voters' weights and the $[N \times J]$ matrix of party positions. Finally, we should also include a restriction for the fact that the centre of the basic space defines the origin. This constrained minimization can be resolved in two steps, although in the case of additional dimensions a third step is required to update those starting values: 1) generating starting values for voters' parameters and for the ideal points of the parties; and 2) improving the solutions by iterating until convergence.

I have reported some detail about the estimation procedure uniquely to show how the main practical consequence of this estimation framework, at least for mere mortals, is to transform the model into an impenetrable blackbox that is impossible to modify in a reasonable amount of time. This makes the implementation of the various changes that the 2S-BAM would imply unfeasible (e.g. specification of heteroskedastic-robust standard errors, hierarchical implementation of the second stage, etc.). Against this backdrop, the Bayesian implementation would simultaneously estimate all parameters from the joint posterior distribution in a straightforward way, via MCMC simulations. The JAGS (Plummer 2003) code of the individual and country-level Bayesian AM model is reported respectively in Appendix A and Appendix B.

Bayesian scaling models (Bafumi, Gelman, Park and Kaplan 2005; Bakker and Poole 2013; Fox 2010; Hare, Armstrong, Bakker, Carroll and Poole 2015; Jackman 2001) preserve the core-logic of the algorithm, but further provide four important advantages: 1) greater flexibility and ease of estimation; 2) the ability to produce uncertainty measures for all parameters; 3) the inclusion of respondents reporting missing answers; and 4) the interpretation of ideal points as distributions rather than as point estimates. The first three aspects are technical advantages related to the estimation process and outcomes, the latter is more 'philosophical' and subject to personal evaluations. In the remainder of the section I will briefly examine these four aspects.

First, in a frequentist setting it is almost impossible to produce Maximum Likelihood estimates of variations of the model. If we want to expand the basic AM setting, then the entire three-stage alternating least square estimator should be adjusted. The only package that currently can implement this model is the *basicspace* R package (Poole, Lewis, Rosenthal, Lo et al. 2016), whose internal functions are programmed in Fortran to speed up the computation time. Thus, re-programming the likelihood of a frequentist AM algorithm even for slight changes would require very advanced programming and statistical skills. Such potential expansions (see Section 7.5) include: using the total number of missing values by party as a non-ignorable party-level predictor of the standard deviation σ_j^2 to produce meaningful estimates of parties' ideological ambiguity; including the total number of reported missing values by voter, together with a score of political sophistication, as non-ignorable predictors of the individual variances σ_i^2 and thus obtaining meaningful estimates of voters' ideological ambivalence. We may also think about the inclusion of additional information at the voter, party or country level, or to use the estimates directly in more complex votes in the same model, i.e. include voters' ideal points directly in a voting model. Second, the Bayesian AM scaling model produces automatically, through MCMC simulations, uncertainty measures for all the parameters simultaneously estimated. In a frequentist setting, only standard errors for the stimuli parameters (i.e. political parties' ideal points), implemented through a bootstrapping algorithm, are possible. In this application, implementing bootstrapping would mean to repeat the entire estimation process at least a hundred times, requiring extremely intensive computation. By contrast, the Bayesian implementation is considered 'embarrassingly parallel', which means that by parallelizing the code the estimation time was cut substantially. Beyond these problems, it would have been impossible to estimate uncertainty measures for individual parameters by bootstrapping; here the superior results of the Bayesian approach are unambiguous. In fact, voters' ideal points are computed as a simple linear transformation in the frequentist setting, which is a deterministic process. Yet in the Bayesian setting the researcher can simply perform the linear transformation using all the simulated values of the distortion parameters, thus naturally producing a distribution of values for each voter's ideal point that contains also information regarding uncertainty.

Third, the classic AM algorithm discards all respondents reporting even one “Don’t know” response. Missing respondents can be included using the generalization provided by Poole (1998) and implemented in (Poole, Lewis, Rosenthal, Lo and Carroll 2016). Yet, there are still two reasons why we may prefer the Bayesian approach. First, the practical alternating least square estimation can be slow and remains easily captured by flat surfaces of the likelihood function. Estimation can be hard when the rectangular matrix is characterised by a substantial number of missing values (e.g. when small parties are included in the survey). Thus, in practical terms the Bayesian approach facilitates convergence by incorporate prior information. In fact, priors are not only important because they allow us to set the polarity of the model, but also because in the practical challenges of estimation, as we can exchange tiny pieces of prior information to exclude implausibly extreme values and thus greatly facilitate convergence in this type of complex hierarchical random effects model specifications.

Second, the Bayesian approach may be preferred if we want to bridge basic spaces using anchoring voters. For instance, when an MP serves for one mandate in the lower chamber and is then elected to the upper chamber. Then, the set of MPs that served in both chambers could be used as anchors to bridge the two basic spaces. In this case, respondents are structurally defined as not responding to the complete set of items, and in these cases the frequentist application is not feasible (Hare, Armstrong, Bakker, Carroll and Poole 2015, 762).

Finally, by conceptualizing latent parameters as distribution rather than as fixed points provides a more informative and realistic depiction of latent positions. Consider the instance of political parties’ ideal points. Once we sample the posterior distribution with the Gibbs sampler, we will obtain a distribution of ideal points for each political party, instead of a single statistic of central tendency and a standard error. Thus, the median point in the distribution of party positions can be seen as the most credible party stance, whilst all the other values of the posterior would directly incorporate the uncertainty surrounding the median. Yet, in all frequentist setting, there is no indication about the distribution of values in the confidence intervals. All we have are two thresholds, and thus a symmetric distribution is generally assumed and superimposed. In a Bayesian setting, instead, the distribution of the parameters can be directly inspected.

Chapter 5 — The two-stage Bayesian Aldrich-McKelvey procedure in practice: data, convergence, validation and descriptive statistics

There is nothing like first-hand evidence.

Sir Arthur Conan Doyle (1887). *A Study in Scarlet*.

5.1 Data

We have outlined a comprehensive mathematical and estimation framework that maps positions retrieved from perceptual data into a common space enabling direct comparisons. In this chapter, I use this framework to produce ideal points for European voters and political parties from twenty-seven EU member states and two European elections (2009, 2014). I proceed step-by-step to guide the reader throughout the estimation process: in the first place, this section presents the data; next I outline the MCMC estimation (section 5.2), before illustrating the functioning of the estimation with two examples (section 5.3). Then, I let the reader familiarize with the intuition behind the ideal points, considering four French voters and showing how reported positions intuitively affect the latent scores (section 5.4). I then return to the initial issue of party positions in Italy and the United Kingdom in section 5.5, to show how ideal points' positions can indeed solve the problem of the counterintuitive rankings of party positions. All the ideal points are illustrated with graphical representations or descriptive tables in section 5.6. This is followed by the key section dealing with the validation of the new measures (section 5.7), and the conclusion (section 5.8).

5.1.1 European Election Survey data

The data required to produce ideal points on the left-right and the integration-demarcation dimensions, and to test the hypotheses set out in Chapter 2, must satisfy a number of prerequisites. First, the theory of a change in the basic structure of electoral competition ideally

requires the inclusion of all European countries. In particular, hypotheses H11–H13 refer to competition structures that involve the entire European project. To the extent to which the integration-demarcation dimension becomes politicized, triggering the mainstream-challenger party competition dynamic, then this should be considered as a Europe-wide phenomenon, since it is the entire Union, as a political project, that is the main target of contestation: the traces that electoral competition that already occur along the lines of the new dimension of supporting/opposing the EU are evident for some member states. To name just a few examples, 2016 has witnessed the Brexit referendum, the Dutch Ukraine–European Union Association Agreement referendum, and the Hungarian migrant quota referendum. Yet, the question is not whether a few countries are now drawn up along this new line of confrontation, but whether on average this now applies to EU electoral competition as a whole. Therefore, the data should ideally include all EU member states. Second, the Aldrich-McKelvey scaling requires perceptual data, i.e. the perceived positions of political parties and movements on the two political dimensions, and voters' self-reported positions. Third, to test all the hypotheses that were developed, we need an extensive set of individual variables. Fourth, and most importantly, the operationalization of the dependent variable in hypotheses H11–H13 (voters' electoral availability) requires non-ipsative measures of party preferences. The most established measurement of this sort is represented by the voters' Propensities To Vote (PTVs) (De Angelis and Garzia 2013; van der Eijk, van der Brug, Kroh and Franklin 2006). Finally, in order to bridge countries, we also need information on national political parties' membership of European Parliament political groups.

Among the large comparative surveys, the European Election Survey (Schmitt, Hobolt, Popa and Teperoglou 2015) is the only one that meets these four conditions,²⁴ while I would still need to include the anchoring information separately. Data for the European Election Survey (EES) are collected for the specific purpose of studying political behaviour and participation in European Parliament elections.

²⁴ The Comparative Study of Electoral Systems (CSES) does not consider the EU as a harmonized second dimension and thus we would be limited to the analysis of the left-right dimension. The same problem holds for the European Social Survey (ESS). At the time of writing there was no harmonized comparative dataset of Europe-wide national elections, as neither The True European Voter project (COST Action IS0806) nor the Policy Votes Project data had been released.

The EES project operates since 1979 and today, including the last edition of 2014, includes eight election studies funded by the European Commission. The survey is generally articulated in various components, including individual pre-electoral and post-electoral surveys, news media content analysis, elite surveys, and analysis of party manifestos. The EES collects post-electoral surveys at European Parliament elections, every five years. Overall, the 2014 version collected about 30,000 interviews (approximately 1,100 interviews for each member state including Croatia)²⁵ via Computer Assisted Personal Interviews. EES 2009 collected approximately 27,000 interviews, about 1,000 per member state) via Computer Assisted Telephone Interviews.

The empirical analyses are thus based on the two EES waves that follow the outbreak of the Great Recession: 2009 and 2014. Moreover, the dataset is particularly suited for large comparative studies by reason of its homogeneous methodology and consistent structure. It also represents an established data source for comparative studies of political polarization (Lachat 2008; Pardos-Prado and Dinas 2010; Vegetti 2014; Lo, Proksch and Gschwend 2014). Although the question whether it is appropriate to extend findings from European Parliament elections to domestic political arenas is dealt with in a dedicated section in Chapter 7, it is worth mentioning here that European elections have been shown to reflect national political issues and as such are characterized as second-order elections (Reif and Schmitt 1980, 1997). The fact that European elections mirror national political arenas is a circumstance that to some extent allows us to extend the empirical findings to national general elections. Moreover, European Elections tend to enhance the electoral performances of niche parties though a larger protest vote. This kind of strategic considerations on the side of the voters is linked to the smaller interest at stake in the EP elections. Nevertheless, while voters may favour casting their ballot for more extreme niche parties, this should not dramatically affect the measure adopted for the construction of the dependent variable in hypotheses H11–H13. In fact, PTVs represent measures of voters' latent utilities rather than of choice (see section 5.2.2 on the operationalization of voters' electoral availability), which

²⁵ With the exceptions of Luxemburg and Malta, with about 500 respondents, and the U.K. with about 1,300 interviews.

are less subject to strategic considerations. This is also in line with the measure of availability, which includes potential and not only actual expressions of party support.

5.1.2 EES 2014 accident

Unfortunately, a major problem occurred during the 2014 European Election Study. The 2014 EES survey (Schmitt, Hobolt, Popa and Teperoglou 2015) was released on the 1st of January 2015 (Popa, Schmitt, Hobolt, and Teperoglou 2015) with a factual error in the wording of the question on items measuring the perceived positions of political parties in terms of support to the European Union integration. This event was not predictable when I started to work on this dataset, which was the only feasible option to assess the 2S-BAM empirical design on two dimensions.

The following question is the correct follow-up to the self-reported placement introducing the scale of support/opposition for the European Union:

And about where would you place the following parties on this scale? How about the (Party X)? Which number from 0 to 10, where 0 means '[European integration has] already gone too far' and 10 means '[European integration] should be pushed further' best describes [Party X]?

This formulation was erroneously translated into the following, wrongly-specified version:

And about where would you place the following political parties on this scale from 0 to 10, where '0' means *the political party* 'has already gone too far' and '10' means it 'should be pushed further'? What number on this scale best describes [Party X]?²⁶

Adding the expression 'the political party' has the consequence that the item loses its original meaning, and leads respondents to potentially misinterpret the question. This error has practically interrupted a data series going back to 1989.²⁷

Providentially, the EES authors produced a partial remedy in the form of a supplementary EES 2014 Post-Electoral Survey (Schmitt, Popa and Devinger 2015),²⁸ released on 10 July

²⁶ Italics added by author to emphasise the error.

²⁷ This event had also initially implicated a major restructuring of my thesis, given that the EU items (and thus the party ideal points on the second dimension) were basically not available for the crucial electoral test of 2014. This meant that I had to readjust the target of my study, before apprehending that the second EES 2014 release was available.

²⁸ This second version of the EES 2014 Post-Electoral Survey was in field between 20 February 2015 and 20 March 2015.

2015. This second version of EES 2014 included both the wrongly specified and the correct specification of the question. The two versions of the question were both assigned randomly to a sample of 66% of respondents, to allow for a 33% overlap share of the sample to which both items were asked. I have therefore only considered the 66% of the sample responding to the correct measure.

This supplementary version of the EES allowed me to recover (at least in part) the original design of my study. In particular, the solution was to estimate the political parties' ideal points on the European Union integration dimension for 2014 from this supplementary release. Notwithstanding, the set of basic controls included in this second release is extremely narrow and this precludes some of the analysis I present for the left-right case.²⁹ On the brighter side, I could specify empirical models at the individual-level that included aggregate polarization measures on the EU dimension for 2014 (relevant for the polarization indices required in H11–H13). Thus, although I have to remark the presence of a time-lag between the measure of left-right polarization and the measure of polarization on the EU dimension, this allowed me to study the relationship between polarization and electoral availability on both dimensions and to recover the original design.

It is difficult to speculate whether this factual error has affected the estimates I produced, or to what extent. One difference is probably that getting further in time from the election, the least knowledgeable voters become more likely to undertake random guessing behaviour, or to skip answers. When the distribution of these politically marginalized or demobilized voters does not differ from those who are more knowledgeable about politics, I would not expect this effect to produce a substantial bias.³⁰ A second potential effect may work inflating the estimates of the voter-specific and party-specific variance terms, although this would not have any practical consequence, or work in favour of any of the hypotheses. Remaining fully aware of the potential problems, it seems unlikely that the decision to use the second release of the EES2014 data has radically changed the inferences.

²⁹ For instance, Propensities to Vote are not included, together with many other important individual controls. This precludes the predictive validation test that I show for the left-right case, which is in any case far more relevant in terms of predictive ability of the vote.

³⁰ The two left-right distributions of ideal points for politically sophisticated and politically unsophisticated voters appear largely overlapping, and a Kolmogorov-Smirnov test led indeed to reject the hypothesis that they were different.

5.1.3 Additional data sources

In the course of the empirical analyses I rely on a number of additional data sources.

Affiliation in the European Parliament data

The second-stage of my model requires information about national political parties' affiliation in the political groups of the European Parliament. I compiled this variable relying on the website of the European Parliament as data source.

Classification of political parties in electoral blocks

Hypotheses H11–13 require the allocation of the national political parties in four different electoral blocks: the left or the non-left block for the first structure of competition; the mainstream or the challenger parties' block for the second.

For the allocation in the left/non-left blocks (see section 2.4.2) I proceeded by including in the left block all political parties using a criterion that included all traditional left-wing party families (i.e. all political parties with a clear socialist and communist orientation), and all the libertarian 'new left' movements, including Green and left-libertarian parties. The vast majority of these parties belong to three political groups in the European Parliament: the Progressive Alliance of Socialists and Democrats, the European United Left-Nordic Green Left, and the group of the European Greens. Moreover, some parties have been coded as belonging to the left block although they have no formal affiliation with any EP group (e.g. the Anticapitalist Communist Party of Luxemburg, the Workers Party of Belgium, and the populist agrarian People's Union of Estonia). All the remaining parties are generally placed in the 'non-left' block. This includes the vast majority of national parties belonging to the group of the European People's Party, the European Conservative and Reformists, the group of Europe for Freedom and Democracy, the Europe of Nation and Freedom, together with the Non-Inscrits lacking a clear left-wing orientation (e.g. the Alliance for the Future of Austria). Greater care was required to separate the political parties of the centre. The general rule has been to consider liberal and Christian-democrat parties (particularly in multiparty systems) as belonging to the non-left group. Yet, in some contexts this would have been misleading on the basis of party ideological background or for the context of domestic political coalitions. In these cases, centrist parties belonging to the Alliance of Liberals and Democrats for Europe

were classified as 'left'. One of these few cases is the Citizens Alliance in Cyprus, a nominally centrist party focusing on Cypriot reunification and registered in the ALDE group in the EP, but whose policies, rhetoric and symbolic references can be safely catalogued as left (they demand a stop to austerity and are against privatization). This type of decision has been taken after careful research using a variety of resources to reduce discretionary decisions, as far as this was allowed.

A similar approach was also used to classify political parties as part of the mainstream or challenger's political block. Following the theoretical framework (see section 2.4.2), the mainstream block includes traditional political actors that alternated in power in recent decades. Differently, the definition of the challengers' block included: old anti-system parties, populist radical parties of the left and of the right, and also non-ideological/post-ideological populist anti-establishment movements. Importantly, this electoral block includes all Eurosceptic parties, irrespective of ideological orientation. Thus, it includes most — but not all — national parties affiliated with the Europe of Nations and Freedom, the Europe of Freedom and Direct Democracy, the group of the European United Left (particularly the members of the European Anti-Capitalist Left), and the Non-Inscrits. Parties of the mainstream block instead generally figure among the Alliance of Socialists and Democrats, the Liberal Alliance, the European Green Party, the European People's Party, and the group of European Conservatives and Reformists. The number of exceptions in the mainstream-challenger block classification is somewhat higher than in the case of the left/non-left block. In the most dubious cases the decision implied a careful examination of various resources to establish the best fitting classification. Kessel (2015) proved to be a particularly useful reference for this end.

Expert survey data

Later in the section I present the validation tests for political parties' ideal points that were estimated. To this end, I used data on European party positions taken from the Chappell Hill Expert Survey (CHES) (Bakker, de Vries, et al. 2015; Bakker, Edwards et al. 2015). In particular, I rely on the general left-right position and on the item measuring the general attitudes towards the European Union.

Moreover, to test the validity of the country-specific distortion parameters estimated in the second-stage of the model, I rely on the only instance to date of DIF-corrected party positions from an expert survey for European parties: the 2010 CHES included anchoring vignettes (Bakker, Jolly, Polk and Poole 2014) describing three fictitious political parties representing hypothetical depictions of a party of the left, a party of the centre and a party of the right. Using the Poole's (1998) extension of the Aldrich-McKelvey algorithm the authors use these three vignettes to estimate comparable DIF-corrected ideal points for the political parties by estimating country-specific distortions.

Finally, the ParlGov data (Döring and Manow 2016) was used to extract additional contextual information (i.e. party share of votes to compute the Effective Number of Electoral Parties; government-opposition status).

5.2 Estimation and MCMC specification

This section provides a detailed account of modelling decisions and of the more practical aspects of the first stage of the 2S-BAM model (i.e. Equations 4.1–4.12, section 4.3.1).

MCMC specification and convergence

Estimation was conducted via Markov Chain Monte Carlo (MCMC). Given the high dimensionality of the parameter's space, the choice was to rely on the Gibbs sampler, implemented in JAGS (Plummer 2003) and accessed through the R package *rjags*. I run two very long chains to explore the posterior density: the first 5,000 iterations are used for the adaptation of the sampling algorithm; then, additional 45,000 iterations are used to update the model.³¹ I discard these first 50,000 iterations. Finally, I ran 10,000 iterations with a thinning interval of 10, that produces 2,000 iterations for each posterior distribution (1,000 per chain).³²

³¹ This optimal amount of burn-in iterations was found running various pre-estimation tests.

³² Strong evidence of convergence to the stationary distributions is provided by multiple diagnostic tests including visual diagnostics, the Geweke, and the Gelman-Rubin test. Visual inspection of the posteriors for this highly dimensional parameter space complicated by the fact that we should visualize literally thousands of diagnostic plots. To this end, I used the R-package *mcmcplots* as it allows to compile an html webpage and open the resulting thousands of plots in a single browser window.

All the functions have been parallelized — MCMC sampling is considered an ‘embarrassingly parallel’ computing task, i.e. parallelization leads to substantial reduction of the estimation time — and the entire estimation process required about eight hours to reach convergence on the 24-core server of the European University Institute’s High Performance Computer.

MCMC provide asymptotically simulation-consistent posterior distribution of the parameters of interest if two conditions are satisfied: the chains have to be representative and stable. Representativeness requires that the chains travels well across the whole parameter space, without leaving parts of the parameter’s range unexplored. If this is achieved, then the MCMC is said to be a good representation of the parameter’s posterior distribution. Chains should also be stable, meaning that the quantities of interest, such as the posterior median, ideally do not change if the chain runs again with a different pseudo-random numbers’ seed. Finally, an additional desirable quality is given by the efficiency of the sampler, the allows the chains to converge quickly to the stationary distribution.

Checking the model’s convergence with literally thousands of parameters is in itself a challenging task. I selected 50 individual parameters at random for each country and checked that the chains mixed properly. Additional evidence of convergence is inferred from the visual inspection of the running mean plot, the trace plot and the autocorrelation plots. Finally, I compute the Gelman and Rubin (1992) diagnostic for all parameters, including all individual parameters. This convergence statistic represents a more generalized formal approach to MCMC convergence detection that requires multiple chains. The idea is to distinguish the between-chain from the within-chain variance, considering the ratio between the total variance (between plus within variance) in the stationary distribution and the within-chain variance. If the chains have mixed properly, then they overlap, and the between-chain and within-chain variance are approximately equal (i.e. their ratio is approximately equal to 1). Otherwise, if chains do not converge, the variance between chains will be larger, suggesting non-stationarity (i.e. ratio greater than 1). The estimation with the indicated number of iterations passes both the visual inspection and the Gelman and Rubin statistic test³³.

³³ Across all the parameters that were estimated, the only one whose potential scale reduction factor exceeds the threshold value of $\widehat{R}_{thresh} = 1.1$ is the variance parameter (σ_p) for one party in Malta, the ‘Nationalist Party’. Greater detail about the converge tests is further offered in the next section.

Parameters' estimation

The number of parameters to be estimated in the first stage, for each country, is $3 \times N_k + 2 \times J_k$, as I have to estimate three parameters for each individual (two latent distortions and one variance parameter), plus two parameters for each political party (the ideal points and the party-specific variance parameters). This means 168,165 individual parameters (56,055 individuals, equivalent to about 1,000 for each country, for 27 countries, two elections, and three parameters for each of them), plus the 752 party-level parameters (considering 198 parties in 2009, 180 in 2014, and two parameters each).

It is no easy task to present all the information produced in a concise way. As a consequence, I will often use graphic representations.

First-stage estimation (country-specific ideal points)

I discard the voters positioning all the parties on the same value, as well as those reporting the perceptions for a number of parties smaller than three. This leaves me with a total number of 56,055 valid respondents across the 27 European Union member states.³⁴ Then, an equal number of latent shift distortion parameters, latent stretch parameters, and individual variances is produced. Moreover, I could compute 37,604 ideal points on the left-right basic space and 14,412 ideal points on the support/opposition towards the European Union basic space.³⁵ For the left-right dimension, the discrepancy between the number of ideal points and the total number of cases accounts for respondents not providing a self-placement in terms of the left-right dimension.³⁶ In the case of the second dimension, the much larger number of missing ideal points depends on the EES 2014 material error in the wording of the question (see section 5.1.2) that had led me not to estimate the ideal points for

³⁴ Croatia is excluded from the analyses. The 2014 were the first EP elections in the country and thus the country is excluded suspecting an insufficient degree of familiarity with European elections and European issues in the electorate.

³⁵ The ideal points on the second dimension are subject to the data availability issues following the EES 2014 accident (see section 5.1.2).

³⁶ The reader should notice that the information from these voters was not discarded to estimate the political parties' ideal points, unless they indicated less than three perceived positions or placed all the parties on the same value. This means that we can also estimate the distortion parameters for these voters, although without their own placement to map in the basic space, we cannot compute the corresponding ideal points.

these voters. Yet, as recalled, the supplementary version of the EES 2014 allowed me to estimate political parties' ideal points.

Overall, I have also estimated the ideal points on the left-right and on the EU dimension for 196 political parties for the 2009 EP elections and for 180 political parties for the 2014 EP elections. In addition, for each of these political parties and movements, I have also estimated the variance terms and, after running the second stage estimation, I have transformed the country-specific ideal points into comparable ideal points on the European Common Space.

Second-stage estimation (European Common Space)

To project the country-specific scores of the first-stage in terms of the European Common Space meant estimating additional 101 parameters for 2009 and 105 for 2014. This corresponds to three parameters for each of the 27 countries, and two parameters for each political group in the European Parliament.³⁷ I split the Non-Inscrits into two groups, separating the left-wing (mainly anti-capitalist and communist parties) and nationalist political groups. In 2014 the number of parameters equalled 105, because of two new groups in the European Parliament (the European Conservatives and Reformists, and Europe of Nations and Freedom).

5.3 Getting a sense of the whole process: visualization of posterior distributions, chain convergence, Highest Density Intervals and central tendency

Here I present (step-by-step) the process of visualizing and checking the posterior distributions for the parameters of individuals and political parties. I have taken the French case as an example, and consider the left-right positions on data from the 2009 EP elections. This section documents a long process of careful visual and statistical checks, that aims at understanding whether the MCMC simulations have properly explored the posterior distributions. What is shown here was literally repeated thousands of times. After an initial

³⁷ The European Parliament's political groups considered in the estimation for 2009 were eight: the European United Left-Northern Green League, the group of the Socialists and Democrats, the Alliance of Liberal Democratic of Europe, the European Peoples' party, the European Green Party, the group of Europe for Freedom and Democracy, plus the group of non-Inscrits split into two: the left-wing and the right-wing oriented non-Inscrits.

phase of trial and error that led to the development of the model in this final version, convergence was achieved for all the parameters estimated.³⁸

In the remainder of the subsection I present the location and distortion parameters for the first French voter in the EES 2009, and show the ideal point computed for the National Front Party. But first, I describe a few cases where I could detect a violation of the homogeneity assumption in the second stage.

The exceptions to the rule: a list of parties that do not belong to EP political groups independently of the ideological or EU integration position

In the first stage the 2S-BAM model can identify the voters reporting ‘wrong’ (i.e. inconsistent with the ranking of party ideal points) perceptions of the party positions. These are the voters associated to a scale distortion parameter (b) that is close to zero or even negative, signalling voters who are randomly guessing or even for some reason perceiving a reversed party placement. While information about the characteristics of these voters are offered in the assessment of hypotheses H5-H8 (see section 6.4), I don’t discuss cross-country differences in this thesis due to space constrain. However, I do stress here that this ability to identify ‘non-ideologues’ actually represents one of the crucial advantages in the 2S-BAM modelling strategy I propose, in that it makes it possible to identify the pool of voters who can potentially voting based on policy orientations.

In a similar way, in the second stage of the model, it is possible to detect which countries ‘misperceive’ the position of the EP political groups. This practically allows to test, rather than to assume, the homogeneity of EP political groups. Empirically I have indeed found that some parties would cause their *countries* to have a zero (or close to zero) scale distortion parameters. These parties, in practice, do not belong to their EP groups for ideological reasons and would therefore break the homogeneity assumption in the second stage (EP political groups). For this reason, I have omitted this parties from the estimation of the

³⁸ The simulations were not particularly efficient, and in future applications researchers would be well advised to choose model samplers, such as the No-U-Turn sampler (Homan and Gelman 2014), over the Gibbs sampler, whose exploration in such a high-dimensional target distribution proved inefficient. This said, the length of the chains proved sufficient for the purpose at hand.

country distortion parameters in the second stage³⁹. I report here the full list of parties excluded from the second stage.

Left-right dimension, 2009

Estonian Centre Party – it belongs to ALDE, but it is perceived as left-wing and not centrist by Estonians and this would break the homogeneity assumption. It is the party of the Russian ethnic minority.

Lithuanian Labour Party — it belongs to ALDE but it is perceived as centre-left. It is a party founded by a Russian-born billionaire. The LP raw average left-right placement is -1.14 (leaning left), but the first-stage ideal point becomes $+1.28$. Sign switches do happen: in the Lithuanian case, it happens also to the Order and Justice party. The latter party can be defined as nationalist, or at least right-wing conservative (it belongs to the EFD with UKIP). The raw left-right placement is -0.6 (centre leaning left-wing), and the first-stage ideal point is $+0.84$. This is in fact a case where DIF distorts party placement. But in the Labour Party case it was suspect and led to a $b = 0$ for Lithuania. For these reasons, I thought the party was breaking the homogeneity assumption and was excluded.

Lithuanian Liberal and Center Union — It belongs to ALDE, but it registered a severe reversal in the ideal point, passing from $+0.19$ in the raw left-right placement to -1.02 (left-wing). Belonging to ALDE, this would also cause the country to get a $b = 0$ parameter and was thus excluded.

EU integration dimension, 2009

Estonian Center Party — passes from -0.2 (raw EU position, signalling soft-euroscepticism) to -1.5 (Eurosceptic party), but the ALDE is a pro-European EP group, so this again would cause Estonian b to be close to zero.

Italian Communist Refoundation Part — Italian far left parties are perceived as pro-European due to Italian political context. In fact, far-left parties were part of the governing coalition in the 2006-2008 Prodi II cabinet. The former President of the European Commission is

³⁹ The omission only involves the estimation of the country-distortion parameters in the second-stage. Once the parameters were identified, then these parties were scaled similarly to all the others.

probably the most pro-European political leader in Italy, and this caused to left to be perceived as pro-European. Since the Group of European United Left is Eurosceptic (the ideal point on the EU integration dimension is -1.048 in 2009 and -0.334 in 2014), this would cause Italy to have a $b = 0$ parameter. For this reason, the party the two far-left Italian parties were omitted from the second stage.

Italian Left and Freedom Party — See previous discussion.

Malta Democratic Action — It belongs to the European Greens, which is pro-European, but the first-stage ideal point on the second dimension is -0.47 (softly Eurosceptic) and this would again cause Malta's b parameter to be close to zero.

Left-right dimension, 2014

Estonian Center Party — See 2009 case.

Lithuanian Labour Party — See 2009 case.

EU integration dimension, 2014

Estonian Center Party — See 2009 case.

Italian Left Ecology Movement — It's a party formed from Left and Freedom, see 2009 case.

Malta Democratic Action — See 2009 case.

Malta Labour Party — In 2014, the Maltese LP passes from a raw average perception on the EU dimension of $+0.43$ to a first-stage ideal point of -0.86 (Eurosceptic). Since PES is pro-European, I had to drop this party for 2014⁴⁰.

Hungarian Fidesc — In 2009 the EU integration position for Fidesc was a spectacular case of DIF, as it changed from $+1.30$ (raw EU placement indicating a strong pro-European stance) to a first-stage ideal point of -0.35 (moderate Euroscepticism). This score was not Eurosceptic enough to cause the Hungarian scale distortion parameter to get close to zero, and therefore the party was retained. But in 2014, the raw placement becomes -0.19 and the first-stage ideal point is -1.06 , and since the EPP is pro-European this was causing the b parameter to become zero. For this reason, the party was removed from the second stage in

⁴⁰ For a description of the Euroscepticism of the Labour Party, refer to: Pace, R. (2009). *Malta: Euroscepticism in a Polarized Country*. South European Society and Politics. Vol. 16(1): 133-157.

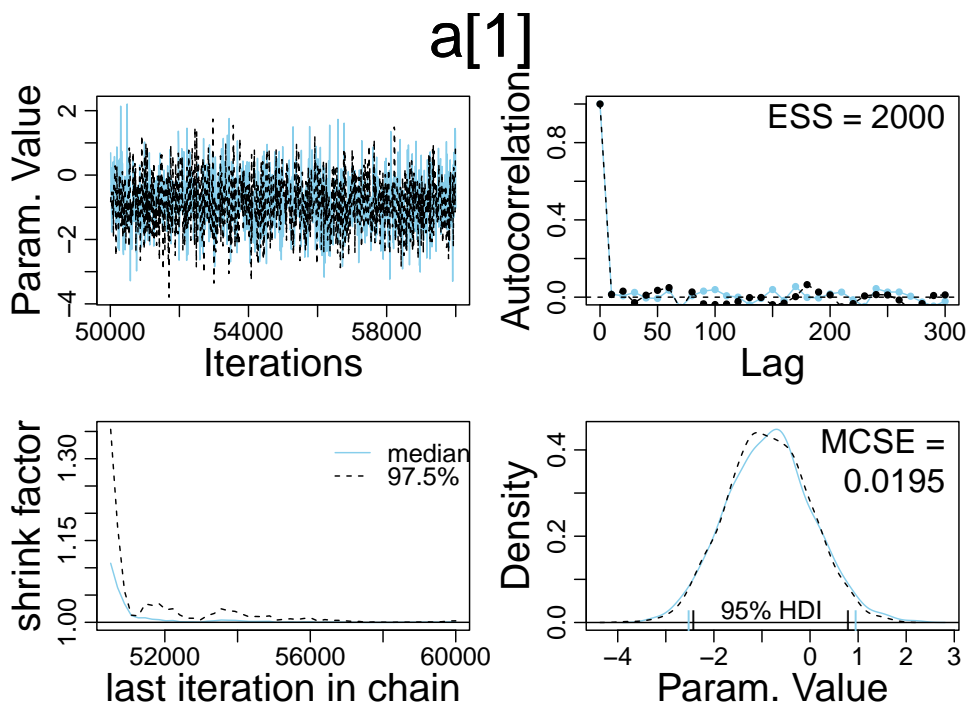
2014. Various commenters have indeed suggested that the EPP should expel Victor Orbàn's party, well before the Hungarian government passed the bill targeting CEU.

The latent shift parameter of the first French voter, EES 2009

To provide a practical example, Figure 5.1 presents the posterior distribution of the intercept (or location parameter) of the first French EES 2009 survey respondent, together with the diagnostic tools used to assess the convergence of all parameters.

Figure 5.1 includes the four most established MCMC diagnostic tools. The four plots from the upper-left quadrant (clockwise) represent: the trace plot, autocorrelation plot, density plot, and the series of the potential scale reduction for each iteration for each iteration and chain. Both Markov Chains have been included in the plot in order to show the mixing/overlapping. This is a first sign that the chains represent the target distribution well. The autocorrelation plot (top-right) relates to the accuracy of the numerical estimates. It contains the autocorrelation function (ACF), a discrete value representing the autocorrelation of the chain values with the values of the same chain at a varying number of forward iteration lags. Ideally, the autocorrelation should decrease quickly immediately after the first few iterations, indicating that each iteration is in fact providing independent values. If this does occur, and the autocorrelation remains relatively high at successive steps in the chain, this implies that the chain values are 'sticky', meaning that the chain can only 'jump' to relatively close values of the posterior from iteration to iteration, providing little information of overall posterior density. If that is the case, the chain requires a larger number of iterations to become a sufficiently accurate representation of the posterior. On the autocorrelation plot I have also reported the Effective Sample Size (Kass, Carlin, Gelman and Neal 1998), which quantifies the amount of independent information in the chain (produced by dividing the sample size by the sum of the autocorrelation values). In the light of these explanations, it is straightforward to infer from our plot that the MCMC simulations that have travelled throughout the posterior distribution of the intercept of the first French voter were not affected by autocorrelation, given how swiftly the autocorrelation function drops to zero and also given the fact that the ESS equals the number of iterations (1,000 per chain).

Figure 5.1 — Posterior distribution of parameter a_1 (voter 1, France)



Note: the figure shows four widely used MCMC diagnostic tools applied to the shift distortion parameter of the first French voter in the EES 2009 sample. Clockwise from the upper-left corner we find: trace plot; autocorrelation plot; density plot and the plot of the potential scale reduction factor (Gelman and Rubin 1992). All plots report values for the two Markov Chains used to explore posterior distributions.

The second plot (bottom-right) shows the posterior density of the parameter for both chains that were run. The two densities are largely overlapping, signalling that the two independent chains are in fact producing the same values. This, in turns, further increases the chances of these values being representative of the target distribution, especially considering that these are very long chains. Additional information is provided in the form of the chain-specific 95% Highest Density Interval (HDI), and the Monte Carlo Standard Error (MCSE). I return to these concepts shortly.

The third plot (bottom-left) contains the series of the potential scale reduction, or ‘shrink factor’ (Gelman and Rubin 1992) along the iterations in the chains. Values approaching 1.0 indicates full convergence in the chain and, as a rule of thumb, convergence is indicated with values smaller than 1.1. Then, the third plot represents additional evidence of convergence with shrink factor rapidly approaching to 1.

Finally, the fourth plot simply contains values from the posterior draws of the parameter. Since the values of the two chains are largely overlapping and indistinguishable, this suggests that convergence has been achieved. In conclusion, all the main convergence diagnostic tools point to representative, accurate and stable MCMC estimates.

HDI and MCSE: a short detour on frequentist and Bayesian approaches

The HDI can be thought of as a Bayesian equivalent of frequentist Confidence Intervals (CI). In the first place, frequentist CI are generally produced in the context of hypothesis testing. The focus of HDI, however, is on the estimation of uncertainty. In this respect, confusion still surrounds hypothesis testing among applied researchers, notwithstanding the established viewpoint of statisticians (Gelman and Stern 2006a, 2006b; Hubbard, Bayarri, Berk and Carlton 2003; Murdoch, Tsai and Adcock 2008). Frequentist CI are defined with respect to a p -value, which captures the amount of evidence against a null hypothesis. A common misconception about p -values is not to acknowledge its nature, i.e. a random variable, whose value is a realization of hypothetical multiple samples' draws. The point is that in the frequentist world the parameter is assumed to be fixed and uncertainty derives from imaginary draws because it is rooted in sampling variation. In the Bayesian framework, by contrast, we can look at the HDI and at the density plot that is superimposed, for what it is: the probability of observing a certain value for the parameter given the data. In the frequentist setting, nothing guarantees that points far from the two endpoints of the confidence intervals are actually more probable, because the interval consists of the two endpoints, and contains no information about the values in it, as it refers to the distribution of the samples (possible sample outcomes) and not to a distribution of probabilities across different parameter's values. Therefore, the Bayesian HDI includes the set of points that cover, in our case, 95% of the posterior distribution: the values that are more credible in the light of the data. The width of the HDI also capture the uncertainty regarding the parameter, and if the distribution is symmetric (as in the present case), it will be centred on the mean and the median of the posterior distribution. If the distributions are skewed instead, HDI will have different tails in order to contain only the most credible values.

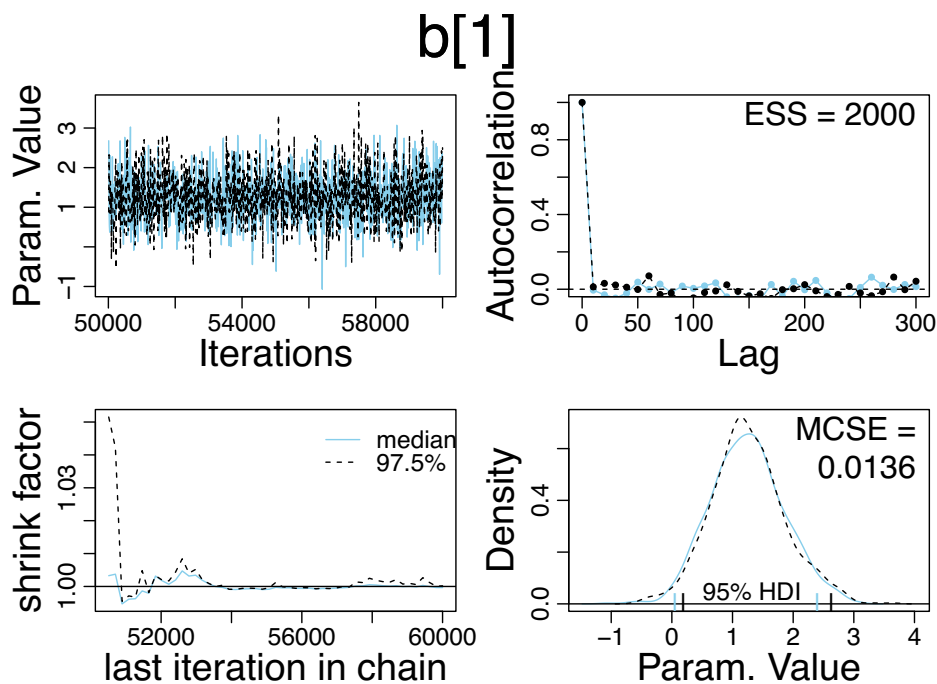
The MCSE indicates the ratio of the standard deviation in the sample and the effective sample size. The fact that it is very low indicates that the posterior mean of the parameter is very

stable. It is worth noting that nothing prevents each parameter in the Bayesian AM model from being potentially asymmetrical or even bimodal, as the normal priors are weakly informative and dominated by the likelihood, although this does not occur empirically in the present case.

The latent stretch of the first French voter, EES 2009

The same diagnostic plots were produced for all individual parameters: not only the intercept (shift distortion) just considered, but also for the slope (stretch or discrimination) parameters, as well as for the individual variances that allow computing heteroskedastic-robust ideal points. Figure 5.2 provides an example of the discrimination parameters' density and performance of the diagnostic tools.

Figure 5.2 — Posterior distribution of parameter b_1 (voter 1, France)



Note: the figure shows four MCMC diagnostic tools applied to the discrimination parameter (stretch/contraction distortion) of the first French voter in the EES 2009 sample. From the upper-left corner we find: trace plot; autocorrelation plot; density plot and the plot of the potential scale reduction factor (Gelman and Rubin 1992). All plots report values for the two Markov Chains used to explore posterior distributions.

For continuity, I present again voter 1's coefficient. All the diagnostic plots indicate that we can be fairly confident regarding the fact that the chains mixed well and converged asymptotically to the target distribution, particularly considering: the sudden decrease in the autocorrelation function and the high effective sample size; the overlap in the densities of the two Markov Chains and the low Monte Carlo Standard Error; the values of the shrink factor constantly below the threshold level of 1.1 and approaching 1.0; the random and well-mixed parameter values across all the last 10,000 iterations.

Central tendency of the posterior

Once we are relatively confident that simulation-convergence has been achieved, we can read these parameters by computing standard central tendency measures, as we now have distributions of parameter values rather than single values that we would find in frequentist analyses. Given the fact that virtually all the thousands of parameters that I have visually inspected are approximately normally distributed, approximately symmetric, the posterior mean, the posterior median and the posterior mode are not expected to diverge substantially. I choose the median posterior as the preferred posterior central tendency statistic due to the fact that it is more robust to extreme outliers than the posterior mean.

Practical interpretation of coefficients

Having shown that the posterior distributions for the two parameters of voter 1 are sufficiently close to the target distributions we proceed to compute the quantities of interest, such as the median and the standard deviation of the posteriors:

$$\bar{a}_1 = -0.83; \quad a_{1 \text{ median}} = -0.84; \quad SD = 0.89;$$

$$\bar{b}_1 = 1.25; \quad b_{1 \text{ median}} = 1.23; \quad SD = 0.60.$$

The origin of the ideological continuum for voter 1 appears to be located at about 0.84 units (of the French latent space) on the left of the location of the common origin of the French latent space. This implies that in order to compare the left-right positions reported by voter 1 to the perceptions of other voters, we need correct for this shift distortion in the respondent's subjective scale. The negative coefficients (a_1) signal that voter 1 is perceiving

the stimuli as more progressive than they actually are, which suggests that voter 1 may be underestimating their own conservative stance.

Thus, we transform the self-placement of voter 1 to make it comparable on the common metric that we have thus identified. The (centred) self-placement of voter 1 on the left-right continuum is $LR_{self,1} = 0$, so we shift it to: $0 - (-0.84) = 0.84$. However, this is not yet voter 1's ideal point on the French common space. In fact, we still have to correct for subjectivity in the distance metric of voter 1. In particular, voter 1's b coefficient suggests that their political stimuli are being perceived as further apart than they actually are, as mapped on the common space. Thus, voter 1's ideological continuum is slightly overstretched compared to the basic space. Therefore, when comparing both the self-reported left-right placement, and the perceived position of political parties, we should account for these distortions: $y_1^* = (0 - (-0.84))/1.23 = 0.68$. This suggests that probably voter 1 is an illusory centrist, as they appear to be conservative whilst explicitly locating themselves in the centre.

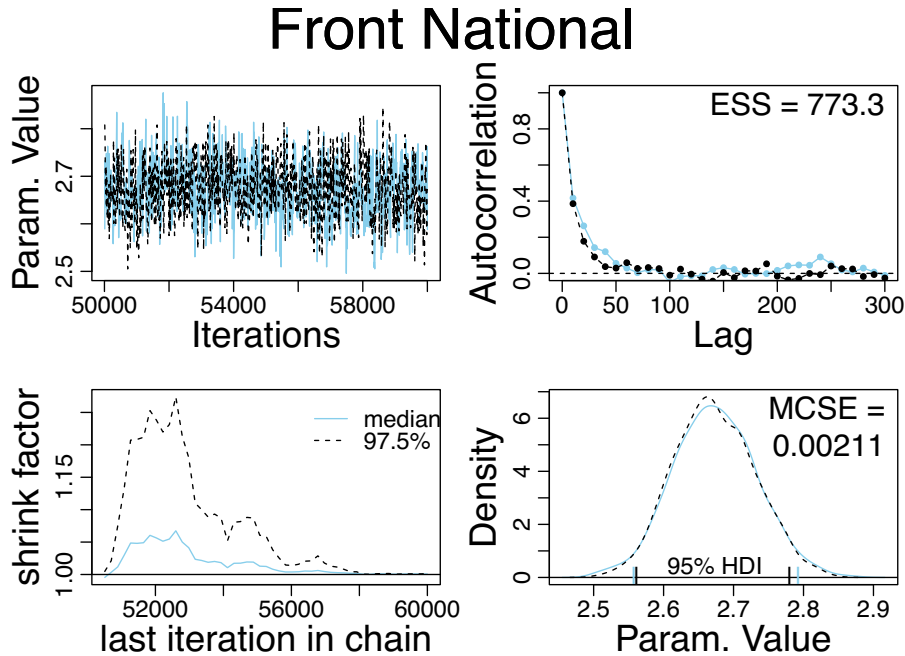
Political parties' ideal points

Similarly to the case of the individual voters, the same visual inspection has been carried out with respect to the latent position's parameters of all the political parties surveyed in the European Election Survey 2009 and 2014. In Figure 5.4 I report the same diagnostic plots that have been previously commented for the case of the individual shift distortion parameter with reference to the ideal point estimated for the National Front in 2009.

The evidence of convergence is again pretty solid. The autocorrelation plot indicates the presence of some autocorrelation, as the ACF plot takes a few lags to reach zero for both chains. This is also reflected in the estimated sample size, which is smaller than the 2,000 nominal values. Yet, as the density and the trace plot suggest, the two chains overlap almost completely and this points towards convergence. In fact, the Monte Carlo Standard Errors (MCSE) is still extremely small, meaning that even if the ESS has decreased, the MCSE is small enough to counterbalance this reduction. The shrink factor also takes somewhat longer to decrease towards 1.0, especially for the first chain, and yet it converges with this value after initially floating. The posterior median of the National Front is $M_{NF} = 2.67$, and the HDI suggest that the 95% most plausible values for the ideal point of this party lie between 2.558

and 2.793, which almost perfectly overlaps with the 2.5%-ile=2.559 and the 97.5%-ile=2.790, given that the distribution is almost perfectly symmetric.

Figure 5.3 — Posterior distribution of the National Front party ideal point (France, 2009)



Note: the figure reports the results from four widely used MCMC diagnostic tools for the ideal point parameter of the National Front (France, EES 2009). From the upper-left corner: trace plot; autocorrelation plot; density plot and the plot of the potential scale reduction factor (Gelman and Rubin 1992). All plots report values for the two Markov Chains used to explore posterior distributions.

5.4 A more applied look at voters' ideal points

We have illustrated the criteria for model convergence and described how the parameters have been estimated as simulated draws from the posterior distribution and what remains is one final step to complete our estimation process. In fact, we can now produce an estimate for voters' ideal points on both the dimensions representing the political space, based on the linear transformation of the self-reported positions through the estimated distortion parameters (see Equation 4.13). Knowing to what extent voters shift and stretch/compress their subjective scales, we can adjust the individual's reported positions to identify their

position in the common political spaces (left-right and EU integration), thus achieving meaningfully comparable scores (both across voters and allowing for direct comparison with political parties).

To retain a measure of the uncertainty of the estimates whilst transforming the voters' left-right and EU-related self-placement into ideal points, I produce the ideal points iteration-by-iteration:

$$y_{im}^* = \frac{y_i - a_{im}}{b_{im}},$$

where: $i = \{1, \dots, N_k\}$ refers to individual voters, $m = \{1, \dots, 2000\}$ represents the iteration in the Markov Chain,⁴¹ y_{im}^* is the m -th projection of the self-reported position on the latent space, and y_i is the self-reported left-right position. In this way, all the information regarding not only the central tendency, but also the uncertainty of those ideal points is preserved.⁴² This is in fact one of the advantages of a Bayesian implementation of the scaling model over the frequentist estimation, where the latter would not allow for computing uncertainty measures for any of the individual parameters (section 4.6). Therefore, we can compute voters' position as the median value from the distribution of the ideal points of the single voter across all MCMC iterations, and also obtain the 95% HDI as previously explained.

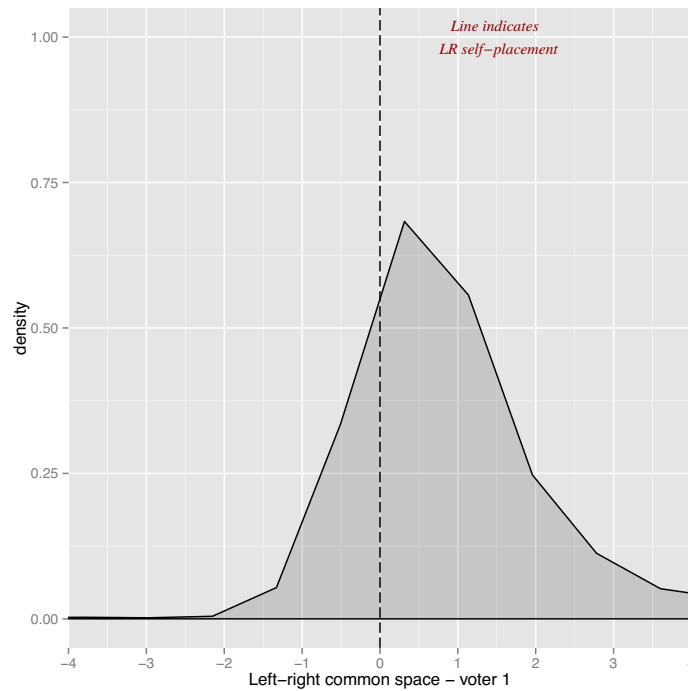
Returning to the case of the French voter 1, we have to divide through this value to finally get voter 1's ideal position on the French common left-right continuum. Voter 1 placed themselves on 0, the centrist position. On the French basic space this position would be: $y_i^* = \frac{0 - (-0.84)}{1.23} = 0.68$. Voter 1 is not as centrist as they report — who would it be exactly for real — but appears to be a moderate conservative.

Figure 5.4 presents the complete posterior distribution of voter 1's ideal points and their left-right self-placement (as a vertical dashed line).

⁴¹ Once the convergence tests show that that the two chains have mixed properly, these are practically independent observations, and therefore the observations from both chains can be considered $[1,000 \times 2]$.

⁴² It would have been much easier to compute the median a and b to obtain a simple numerical ideal point rather than an entire vector, but potential weirdness in the simulations (i.e. bimodality of some parameters, or extreme skewedness) would have remained undetected.

Figure 5.4 — Empirical distribution of simulated ideal points (EES 2009, France – voter 1)



Note: the density plot reports the simulated values of the ideal point of voter 1, as resulting from the transformation of the self-reported left-right placement with the 2,000 posterior draws of the DIF distortion parameters in the EES 2009 French sample. The vertical line indicates the (centred) left-right self-placement at 0, while the horizontal axis indicates the position on the latent ideological space.

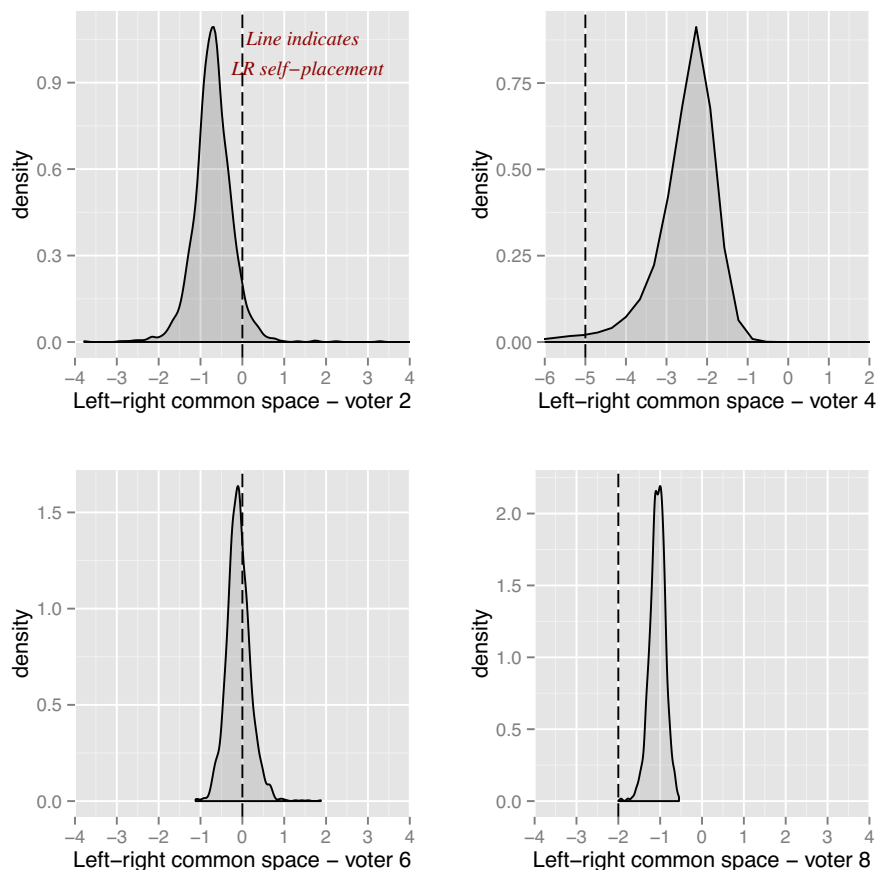
At this point, it is useful to extend the example of voter 1 to additional voters, in order to get a better practical understanding of the functioning and implications of ideal points' estimation. I continue the French example, this time selecting voters 2, 4, 6 and 8 in the original order of the EES dataset.⁴³

Similarly to the previous plot for voter 1, the four plots in Figure 5.5 represent the distribution of ideal points resulting from the iteration-by-iteration transformation of the self-reported left-right position with the estimated distortion parameters. Once again, a line indicating the location of the (centred) left-right self-placement ranging from extreme left (-5) to extreme right (5) has been superimposed. The voter's 2, 4, 6, and 8 reported self-placements are respectively of 0, -5, 0, and -2.

⁴³ The IDs of the four voters are respectively 125001800216126, 125001800317704, 125001800356328, and 125001800146715.

Besides the case of voter 6, the ideological self-placement appears to be situated units apart from the median of the ideal points' distributions. The fact that self-perceived left-right diverges from the central tendency of the ideal points shows the opportunities of introducing the Bayesian scaling model: the subjective ideological scale remains latent inasmuch as we are not able to estimate the distortion parameters. Intuitively, the median of the ideal points' distribution and the left-right self-placement would overlap if the shift and slope distortion parameters remained unchanged in the electorate. The fact that they did change is a sign that the ideological scales are 'set' different differently for different voters, and as a consequence that the meaning of 'left-right' actually differs across voters.

Figure 5.5 — Empirical distribution of simulated ideal points (EES 2009, four French voters)



Note: the density plots report the ideal point draws as resulting from the transformation of the self-reported left-right placement with the 2,000 posterior draws (1,000 per chain) of the DIF distortion parameters of voters 2,4,6 and 8 in the EES 2009 French sample. The vertical line indicates the (centred) left-right self-

placement, while the horizontal axis indicates the position on the latent ideological space.

The figure 5.5 shows that the direction of the difference is not immediately predictable: voters 4 and 8 (right-side) appear to be more moderate than self-reported voter 2 (upper-left) who is another illusory centrist, who turns out to be left-leaning whilst reporting to be centrist. Finally, the position of voter 6 lies in the centre both in terms of both self-reported and ideal points. This may sound counterintuitive, but it is actually a logical implication of the fact that these voters perceive the same political actors in different ways. These ‘additional puzzles’ led me to investigate the determinants of latent distortions in more depth, by explicitly tackling a set of hypotheses.

Table 5.1 — Summary of self-placement, ideal points and party placements for voters 2, 4, 6 and 8 (EES 2009, France)

	Voter 2	Voter 4	Voter 6	Voter 8	Party ideal points
Left-right self-placement	0	-5	0	-2	-
Ideal point	-0.707	-2.377	-0.107	-1.058	-
New Anticapitalist Party	0	-5	-3	-5	-2.648
French Communist Party	-3	NA	-2	-4	-2.042
Left Party	-2	NA	-5	-2	-1.801
Green Party	0	NA	0	-2	-0.544
Socialist Party	1	-5	-1	-1	-0.720
Democratic Movement	0	NA	0	0	0.156
Union for a Popular Movement	3	3	2	2	1.627
National Front	5	5	5	5	2.671
a_i	0.793	-0.544	0.154	-0.190	-
b_i	1.146	1.880	1.467	1.709	-

Note: the left-right placements and the self-placement has been centred to range in -5 (extreme left placement) to +5 (extreme right placement). The ideal points are expressed on a standard normal metric and are computed as the median of the posterior distributions.

Table 5.1 will help us to form the basic intuition regarding the relationship between the ideal points and the reported perceptions of parties' stance, and this provided initial guidance on the specification of the empirical hypotheses. The table reports party placements and self-placement on the left-right scale for the four voters previously considered in the density plots. Moreover, it includes perceived party positions, the estimated ideal points for the French political parties, and the voters' ideal points (median value of all simulated posterior draws). The left-right placements are centred in 0 and range in $[-5, +5]$ with orientation from the left to the right; the ideal points' metric is imposed to be standard-normal.

Let us consider the perceptions of voter 2 who misplaced the radical-left New Anticapitalist Party reporting it on 0, and did not place the French Communist Party on the left end-point. In fact, they perceived the Left Party as more centre-left (-2, three values away from the 'Left' endpoint at -5), the Green Party as centrist and the Socialist Party as centre leaning-right (+1). On the other side, the right-wing parties appear to be placed according to the labels: the Popular Movement is perceived as centre-right (+3), and the Nationalist Front at the right endpoint. Overall, it seems that voter 2 perceives the political items, particularly those of the left, as more conservative than they actually are. This could imply that the voter's subjective ideological continuum has the origin shifted to the left, compared to the origin of the common space: intuitively, when the origins shifts to the left, as from 0 to -1, then a hypothetical party placed in 0 (before the shift) would be placed in +1, as leaning right, even though its objective position actually remains unchanged.

Thus, if voter 2 truly has a shift of this kind, this means that we should add a positive constant to the placement of voter 2 to express it in terms of a shared ideological continuum. This positive constant is similar to our estimated intercept individual distortion: $a_2 = 0.793$, that implies that voter 2 is in fact rating the political parties as too conservative (although one should always consider the scale distortion). This is the value that corrects the left-shifted subjective ideological space of voter 2 to overlap with the French common (i.e. shared) space: as the origin is shifted to the left, it becomes clear why the self-placement in 0 actually does not imply a centrist placement in the common representation of the scale, but only in the subjective one. That is why it is correct to place voter 2 slightly to the left than the self-reported position, if we want to make meaningful comparisons across voters. Next, we ask

whether the voter's subjective ideological continuum is further stretched or compressed, leading to differing perceptions regarding ideological distances. This scale distortion is captured by the slope b_i . In the case of voter 2, we see that the coefficient is $b_2 = 1.146$, signalling that their distance metric is wider than in the common space. To an expert reader this may seem counterintuitive: voter 2 did not use the entire left-right placement scale available to place the political parties. For instance, the voter does not perceive the distance between the National Front and the Anticapitalist-Workers' Struggle Party to be 10. In fact, voter 2 is empirically stretching the French ideology space if we consider all French voters. This intuition that more knowledgeable readers would have used the entire range of values, probably returning an even larger scale distortion score, led to formulate hypothesis H5 (we can immediately note that voter 4, placing the Anticapitalist Party on -5 and the National Front on 5, is characterized by a scale distortion of 1.8).

We obtain similar results from the analysis of voters 4, 6 and 8: voter 4 (column 2, Table 5.1) perceives parties as being far apart (distance between the Anticapitalist Party and the Front National is 10); interestingly, voter 4 perceives not just the Anticapitalist Party, but also the Socialist Party as located on -5. The first consideration deals with the scale distortion parameter (voter 4 discriminates among political parties' positions), but the second one — the Socialist Party is perceived as extreme — leads us to conjecture that the origin of the ideological space of voter 4 may be shifted to the right. In fact, the intercept parameter in this case is negative $a_4 = -0.544$, signalling a consistent perception of the stimuli as too progressive.

With backward induction, we can observe that voters 6 and 8 have smaller (absolute) values for the a_i parameters, and that both of them assign negative ratings to the left-wing parties (the only exception being voter 6 assigning 0 to the Green Party), and positive values to right-wing parties. Both place the Democratic Movement on 0; also, the fact that voter 6 places the Anticapitalist Party on -3 instead of -5 and the Communist Party on -2 can explain the slightly positive parameter $a_6 = 0.154$. Moreover, the two stretch coefficients are quite high and this is because, as already observed, voters 6 and 8 perceived the stimuli quite wide apart.

These simple examples help us get a more applied grasp on the nature and meaning of voters' ideal point estimation. Yet, as we shall see, there are more aspects that have to be considered in order to exploit this new information fully.

5.5 The initial puzzle solved: political parties' ideal locations in the basic space

In this section I illustrate the consequences of differential item functioning (DIF) on the raw average left-right indicators that are routinely adopted in the study of political behaviour and party competition.

In the first chapter, we considered two cases — Italy and the United Kingdom in 2009 — in which the voters were indicating seemingly incorrect left-right positions for political parties. The prevailing narrative around voters' misperceptions has focused on the lack of a sufficient level of political knowledge on the side of the electorate. I show that a different measurement strategy can solve the puzzle: using the same data, but a different modelling strategy, party positions, as reported by voters, become meaningful. In the words of Aldrich and McKelvey (1977), part of the confusion that is attributed to voters should be attributed to wrong models.

Wrong party positions presented in Chapter 1 were not due to voter ignorance or random-guessing, but rather by DIF (diverging subjective perceptions). In the next two subsections I illustrate how 2S-BAM can resolve the question of the Italian and British party locations.

5.5.1 Italian party positions: correcting DIF-inflated raw left-right placements with ideal points' estimation

Italy in 2009 was a polarized multi-party system organized around two political coalitions (centre-left and centre-right). From left to right we find the Communist Refoundation Party, the faction of the old Italian Communist Party which did not accept the transformation into the Democratic Party of the Left after the fall of the Berlin Wall;⁴⁴ the Left and Freedom party (a post-Communist and ecologist left-wing party); the Democratic Party is the main party of the centre-left had just lost 2008 general elections notwithstanding a shift towards the centre made by its former secretary Walter Veltroni; the Italy of Values is a small anti-corruption movement; the Union of Christian and Centre Democrats is a small centre party formerly part

⁴⁴ This is the party that withdrew external parliamentary support in a dramatic no confidence vote on the government led by Romano Prodi in 1998. Since then, the Italian left has remained a largely fragmented and structurally weaker political force.

of Berlusconi's political coalition. On the right-wing, Berlusconi's People's Freedom Party was the majority leader, having obtained a landslide victory in the 2008 general elections. The new movement was launched by its charismatic leader in 2007 as the concluding stage of the federation with the post-Fascist National Alliance Party, whose leader, Gianfranco Fini, was later (2010) defined as 'incompatible' with the political line of the party and forced to leave the party. In 2009 the Northern League was a regionalist, far-right, anti-immigration and Eurosceptic political movement and Berlusconi's coalition partner in the cabinet. Finally, The Right mainly represents nostalgic far-right hardliners.

In the first chapter, we noted how voters perceived the People's Freedom Party as being on the right of the far-right Northern League. Figure 5.6 provides a synthetic view of the Italian party system reporting both the left-right standard averages, and the party ideal points estimated with the 2S-BAM procedure.

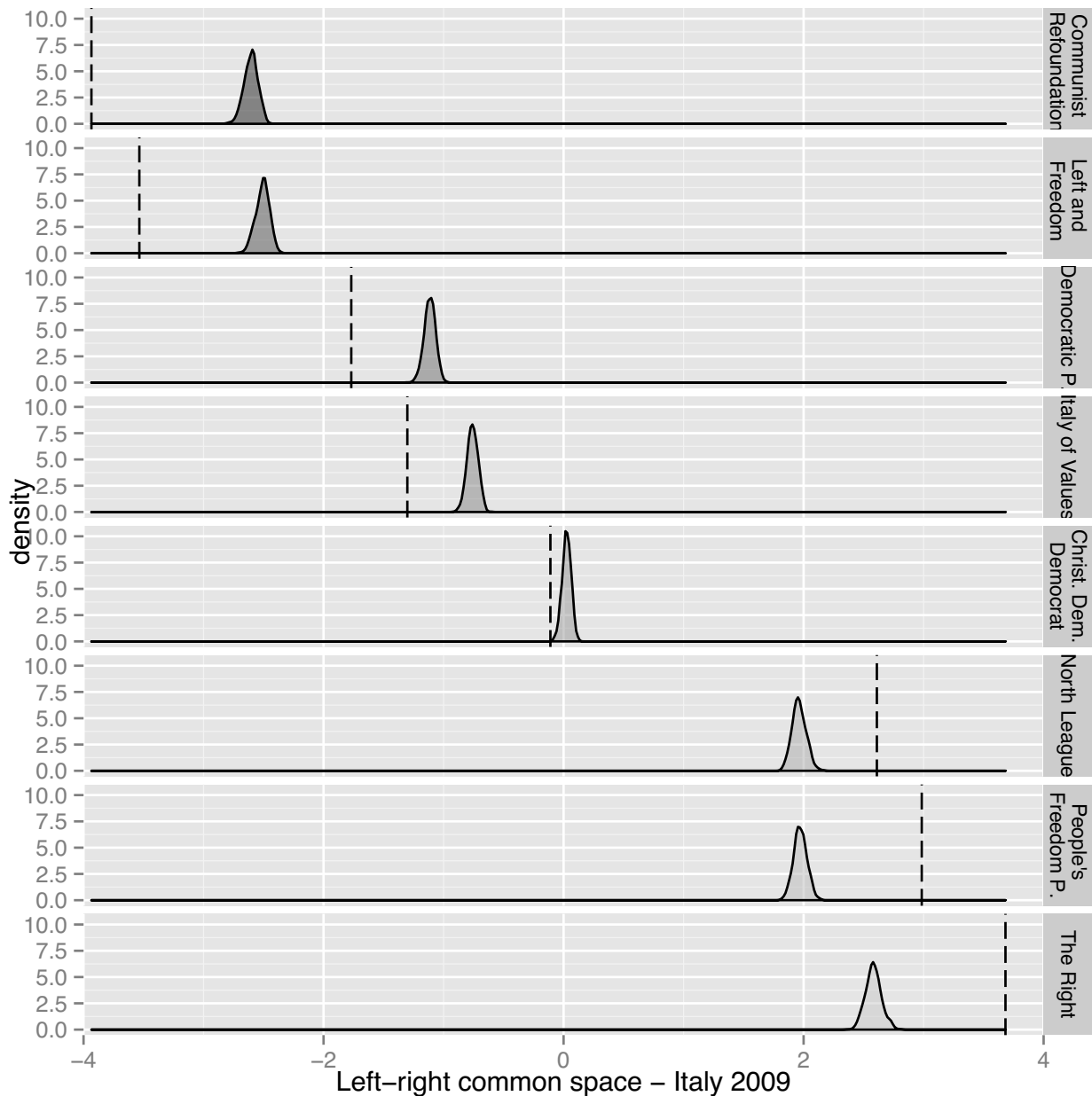
In the same way that Italian voters' self-placements were corrected for subjective distortions, so political parties' ideal points differed from the raw voters' left-right placement in that they did not include the effect of heterogeneity in subjective perceptions. If we focus, in Figure 5.6, on the bottom-right side of the figure. Berlusconi's party average left-right placement on the EES survey is 3.0, on the right of the Northern League, whose average value is 2.6. As stated in Chapter, 1 even acknowledging the most conservative and even reactionary traits and policy positions of the People's Freedom Party,⁴⁵ this party is still made up of a broad moderate catholic faction, and sits in the European Parliament with the European Peoples' Party. The fact that its average raw left-right position pushes it to the right of the far-right Northern League seems counterintuitive at best. In the 2010 CHES expert survey nine experts who evaluated the Italian parties assigned an average of 8.55 (SD = 0.88) to the Northern League, and 7.55 (SD = 0.88) to the People's Freedom Party.

The ideal points correct differential item functioning, thus contaminating the raw party placements and recover what appears to be the correct rank order: in 2009 the two parties were in fact the two main coalition partners in Berlusconi's fourth government, with the Northern League holding key positions such as the Ministry of the Interior. Once the

⁴⁵ These include charismatic leadership complemented by the virtual absence of internal democracy in the party, the draconian welfare cuts, the obsessive emphasis on not raising taxes, strong anti-Communism, massive deployment of the military on the streets to protect the country, anti-immigration laws, among other things.

ideological placements are amended, we find a substantial ideological overlap between the two incumbent parties.

Figure 5.6 — Ideal points of Italian political parties (posterior densities)



Note: the plot represents the densities of the posterior distributions of ideal points for the Italian political parties, EES 2009. From the upper to the lower pane the parties are sorted from the extreme left (Communist Refoundation, dark grey) to extreme right (The Right, light grey). Dashed lines represent the raw centred average left-right placement from -5 (extreme left) to +5 (extreme right)

The ideal point estimation allows for direct meaningful comparisons both across parties and between parties and voters. Furthermore, given the interval nature of the measure, we can directly interpret the differences between political actors, or between political actors and specific points in the space. For instance, we can ascertain that the People's Freedom Party is more extreme than the Democratic Party, given the greater distance with respect to the centre-right party.

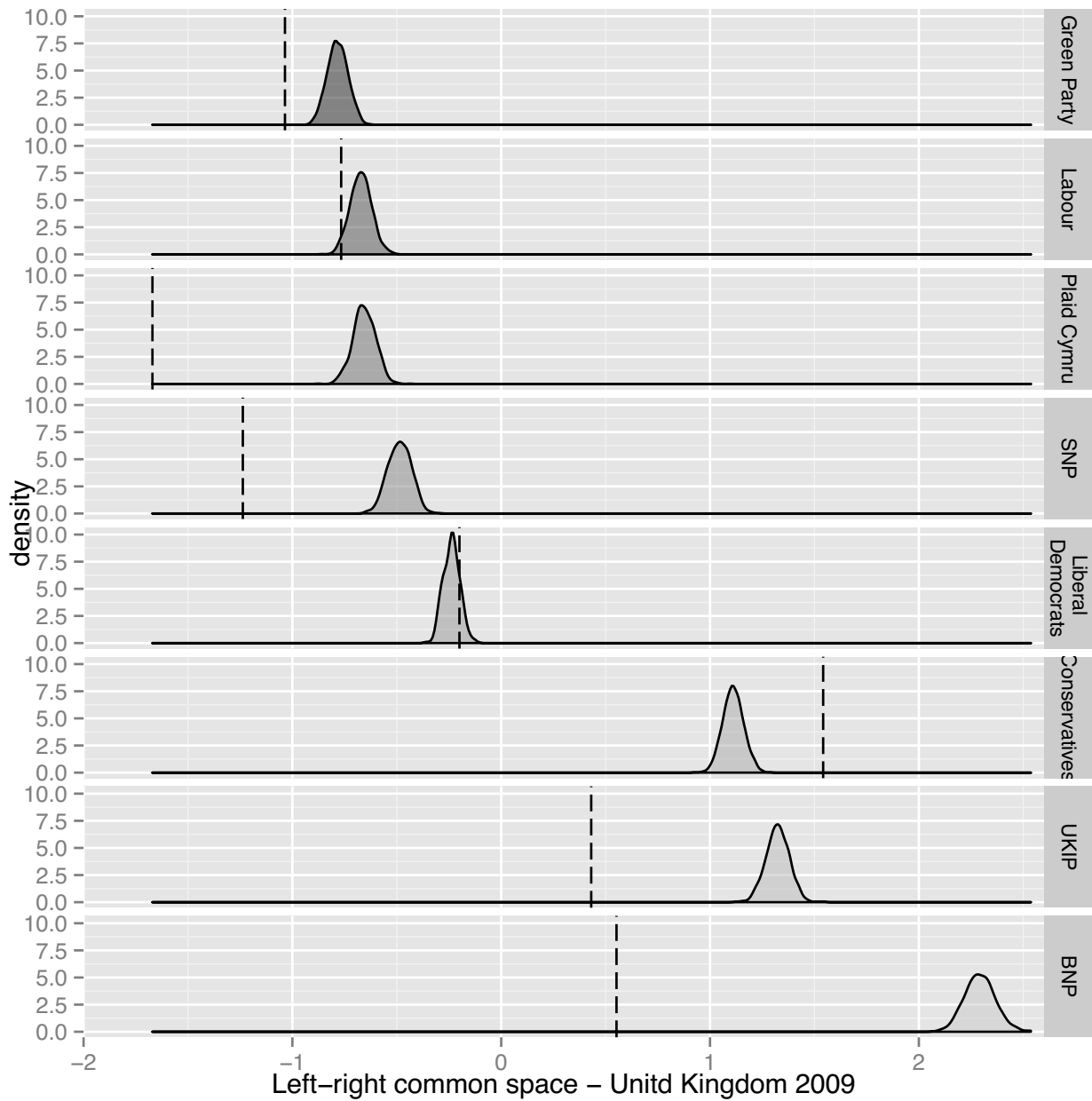
5.5.2 Ideal points of British parties: retrieving comparable party positions with highly DIF-distorted perceptions

Historically, the United Kingdom has been a classic example of Duverger's Law with a two-party system on the basis of a first-past-the-post electoral system. Over the last fifteen years the share of the votes of the Conservatives and Labour shrank consistently, and new political actors appear on the British political scene. After the Liberal Democrats won 22% of the popular vote in the 2005 general elections pundits redefined the system in the United Kingdom as a 'two and a half' party system.

In the 2009 European elections the conservative Eurosceptic United Kingdom Independence Party (UKIP) had a breakthrough winning 16.5 per cent of the vote (coming second, ahead of Labour and the Liberal Democrats). Finally, the British National Party (BNP), a far-right anti-immigration party led by its former leader Nick Griffin — heavily contested for referring to the Holocaust as 'the Holochoax' as well as for homophobic and Islamophobic comments — was also trying to mobilize Eurosceptic voters. Finally, the EES survey also includes the regionalist Scottish National Party (SNP) and the Welsh Plaid Cymru.

The United Kingdom's ideological space, particularly the location of political actors, immediately appears very different from the Italian case. Most importantly, the rank order of British political parties differs substantially between the ideal points and the left-right raw placements.

Figure 5.7 — Ideal points of U.K. political parties (posterior densities)



Note: the plot represents the densities of the posterior distributions of ideal points for British political parties, EES 2009. From the upper to the lower pane the parties are sorted from the left (Green Party, dark grey) to the extreme right (The British National Party, light grey). Dashed lines represent the raw (centred) average left-right placements from -5 (extreme left) to +5 (extreme right).

If we have to measure party positions by simply looking at their average placement of the left-right scale by British voters, we would learn that the Conservative Party has a (centred) average of +1.54. This would be a quite moderate position if we erroneously compare it to

the Italian party system, but in the United Kingdom it implies that the Conservatives' average left-right placement is located about one unit on the right of UKIP (which has an average rate of +0.43), and even of the British National Party (rated on average +0.55). This rank order clearly does not reflect an objective ranking of positions of British political actors.

In the 2010 data, the twenty CHES experts assign an average placement to the Conservative Party equalling 7.13 (SD=0.64), where 0 means left and 10 means right. UKIP is rated 8.79 instead, on the right of the Conservative Party (SD=0.70). Finally, the British National Party receives an average placement of 9.93 (SD=0.27), practically placed in proximity of the right-wing endpoint of the ideological continuum.

As we have already seen, differential item functioning introduces a systematic bias in the left-right placement that distorts party positions. The Bayesian scaling model presented in Chapter 4 appears to estimate voters' DIF distortions successfully and to correct them, thus allowing us to recover the true underlying rank order of the stimuli.

Examining the median values of the posterior distributions of the British parties' ideal points, we can immediately see how the Conservative Party is pulled towards the centre. From being the most right-wing stimulus in the raw left-right perceptions it now ranks third on the right. In fact, both UKIP and the BNP are instead pushed back towards the right. Furthermore, the BNP is pushed way farther than UKIP, while they were almost overlapping on the raw left-right average. In the simple raw averages, the distance between the centre and the Conservatives is double the distance between the centre and the BNP. After the correction, the distances are flipped, with the BNP located at double the distance from the centre compared to the Tories.

There are also noticeable changes on the opposite ideological field. Here, the ranking using the raw left-right averages placed the regionalist parties far to the left, followed by the Greens and Labour. In contrast, looking at the Bayesian posteriors we find the Greens, Labour and Plaid Cymru in about the same location, followed by the Scottish National Party, positioned a little more towards the centre, between Labour and the Liberal Democrats. If we compare the estimates to the CHES results we find that the twenty experts also placed the Green Party and not Plaid Cymru as the most left-wing political party ($\overline{LR}_{Green} = 2.53; St. Dev. = 0.74$; followed by Plaid Cymru $\overline{LR}_{PC} = 3.00; St. Dev. = 1.51$, the SNP ($\overline{LR}_{SNP} = 3.33; S. D. = 1.50$), and the Labour ($\overline{LR}_{Lab} = 4.00; S. D. = 0.76$).

The ranking is not the same for the Bayesian Scaling scores and CHES. In fact, CHES is used as a rough comparison to find substantive meaning to the most striking changes. I am not suggesting that expert surveys should be a correct measure since they are also vulnerable to DIF distortions (Bakker, Jolly, Polk and Poole 2014; Bakker, Jolly and Polk 2012; Benoit and Laver 2012; King and Wand 2007). We will return to this point in the final section of the chapter, the reader can also note the larger standard errors in the experts' placement of SNP and PC.

5.6 Descriptive statistics and plots

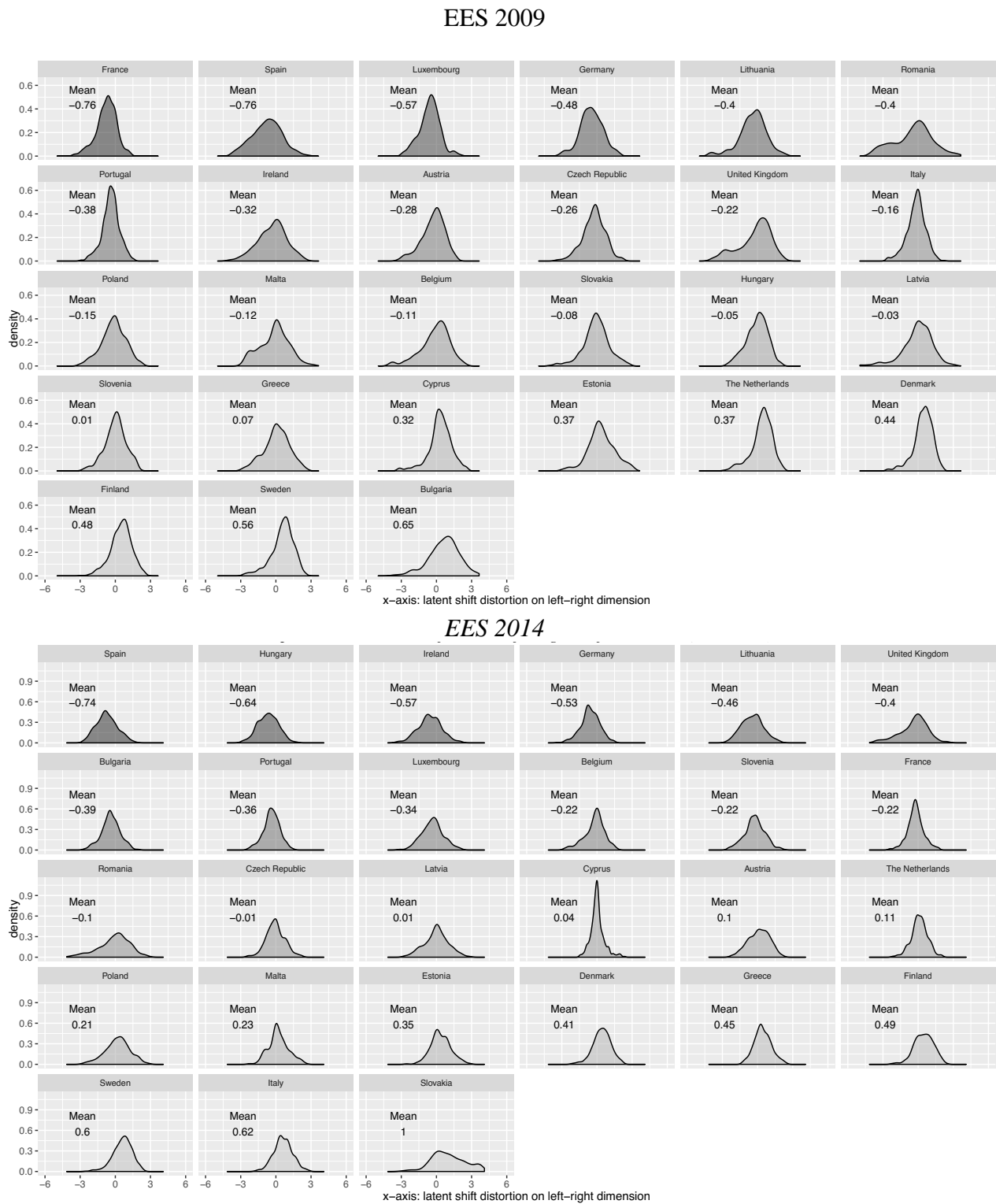
Before validating the newly estimated latent parameters I present descriptive statistics and graphical visualization to obtain an overview of European voters and parties' ideal points. To this end, I use graphical representations of the ideal points' distributions disaggregated by country, in order to provide a sense of the empirical distributions of the estimated latent parameters.

I first present the individual-level parameters, according to this sequence: 1) latent shift and scale distortions for 2009 and 2014 on the left-right dimension; 2) latent shift and scale distortions for 2009 on the EU dimension; and 3) distribution of ideal points in the twenty-seven EU member states in 2009 and 2014. Then, I present a dot plot with left-right party positions as measured by the ideal points previously estimated for 2009 and by the 2010 Comparative Manifesto Project (CMP) data. As the plot shows, CMP data provide very imprecise indications of party positions. In some cases, they are plagued by measurement error. For instance, the most right-wing political party in terms of CMP RILE scores in 2009 would be the Greek Communist Party. For these reasons, I use CHES data to validate my estimates. Finally, I report the country-specific distortion parameters, the ideal points of the European Parliament's political groups.

5.6.1 Voters' distortion parameters

Figure 5.8 shows how voters differ with respect to the centre of the left-right ideological continuum.

Figure 5.8 — Distributions of voters' left-right shift distortions



Note: the figure contains density plots representing the empirical distributions of the latent lateral shift distortions on the left-right dimension as estimated through the 2S-BAM procedure disaggregated by country for 2009 (top panel) and 2014 (bottom panel).

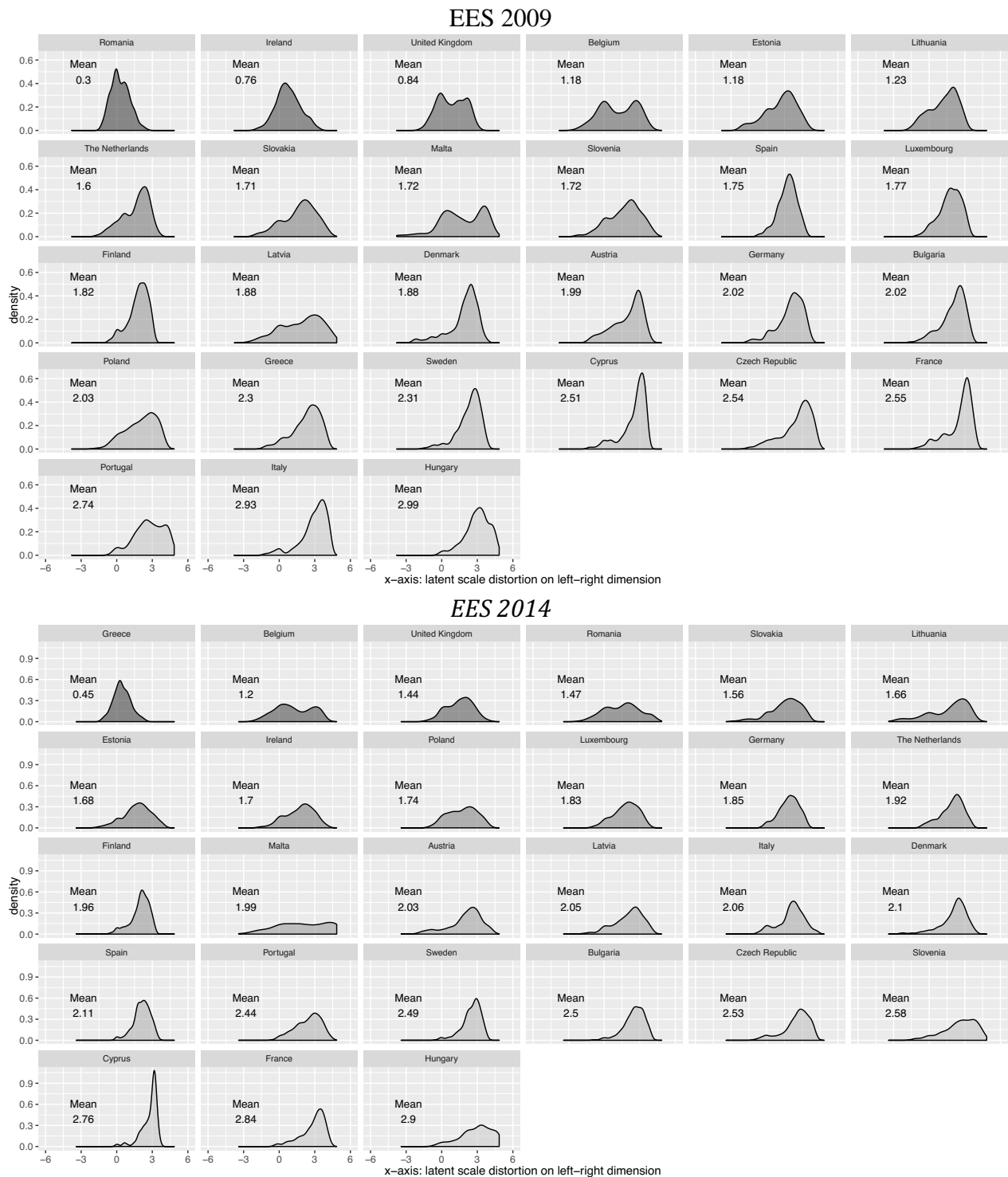
The figure reports for each voter the median posterior drawn from 2,000 simulated values, visualized as distributions separated for each country and both the elections taken into account. As recalled, direct comparability of ideological positions corresponds to the assumption of constant latent lateral shift and stretch distortions. This section shows how this implicit assumption does not hold on empirical grounds. I have found a substantial variation across individuals with respect to the position of the centre of the ideological space, and to the distance metric used in perceiving distances. This means that subjective perception, and all the previous discussions on the subjectivity of social reality are not just theoretically sound, but are also empirically present.

Inspecting the figure, we can distinguish two specific considerations. First, in every European country there is a substantial variation across individuals in the latent score of lateral shift distortion: some individuals consistently shift party perceptions to the left ($a_i < 0$), whilst others shift party perceptions to the right ($a_i > 0$). In most cases, the distributions are approximately normal-shaped, although in some (e.g. Romania, Austria, the United Kingdom, Malta, the Netherlands) we observe a second mode on the left side of the distribution, suggesting that small subgroups of the electorate consistently perceive political parties more on the left than they actually were. For instance, in the United Kingdom's case, this is the kind of mechanism that led voters to misplace the British National Party and UKIP as more progressive than they actually were. Second, we note that there is also considerable variation across countries: the mean of the distributions of lateral shifts' parameters range between the -0.76 in France to the 0.65 in Bulgaria. In theoretical terms, this is not the same thing as cross-country incomparability (see section 3.7)⁴⁶. Cross-country incomparability arises when the ideal point is estimated in the first stage of the model for one country (e.g. a Bulgarian party may not be the same thing as the same ideal point in another country), because the two basic spaces are not linked. These two sources can indeed coexist.

In the same way, the next Figure 5.9 presents a visual inspection for the distribution of the scale parameters b_i in all considered elections.

⁴⁶ The average shift in the previous figure simply means that a majority of voters either perceived political parties as more left-wing than they actually are (e.g. in France and Spain), or perceived parties as more conservative than they actually are in terms of the ideal points (e.g. Sweden, Bulgaria). This has to do with incomparability within countries, across voters in the same country.

Figure 5.9 Distributions of voters' left-right stretch distortions



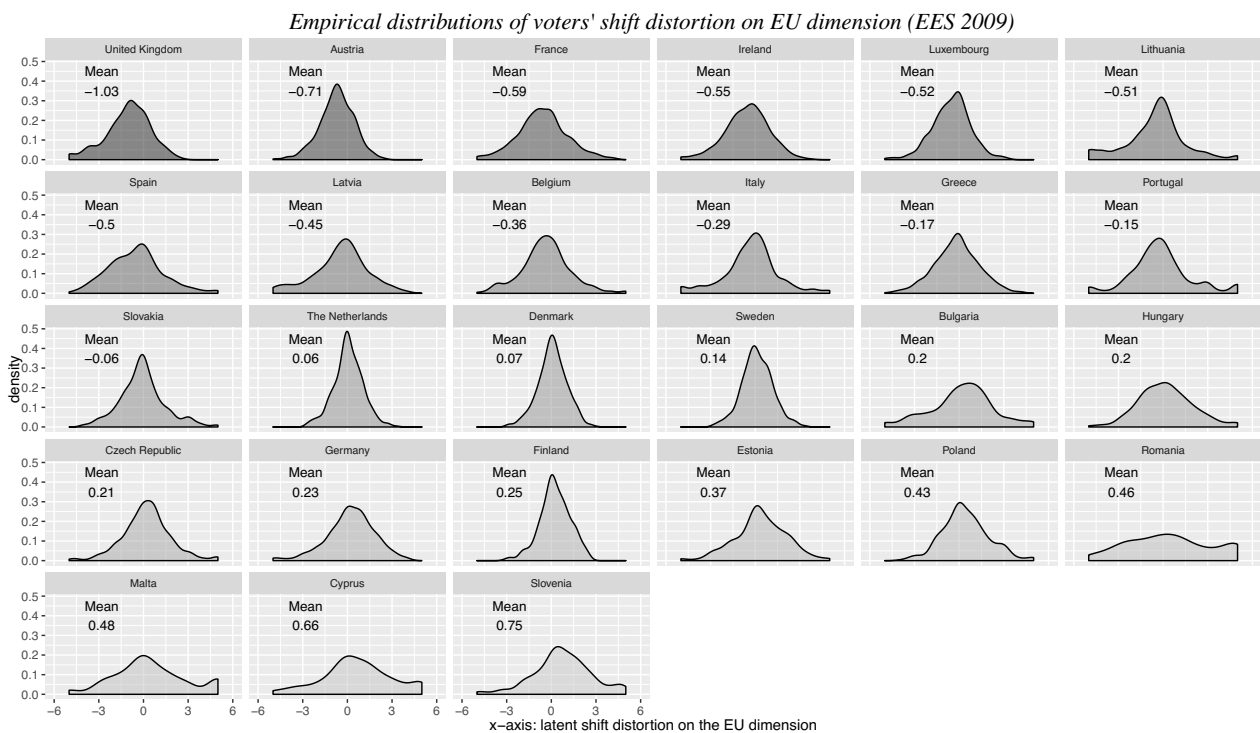
Note: the figure contains density plots representing the empirical distributions of the scale distortions on the left-right dimension as estimated through the 2S-BAM procedure disaggregated by country for 2009 (top panel) and 2014 (bottom panel).

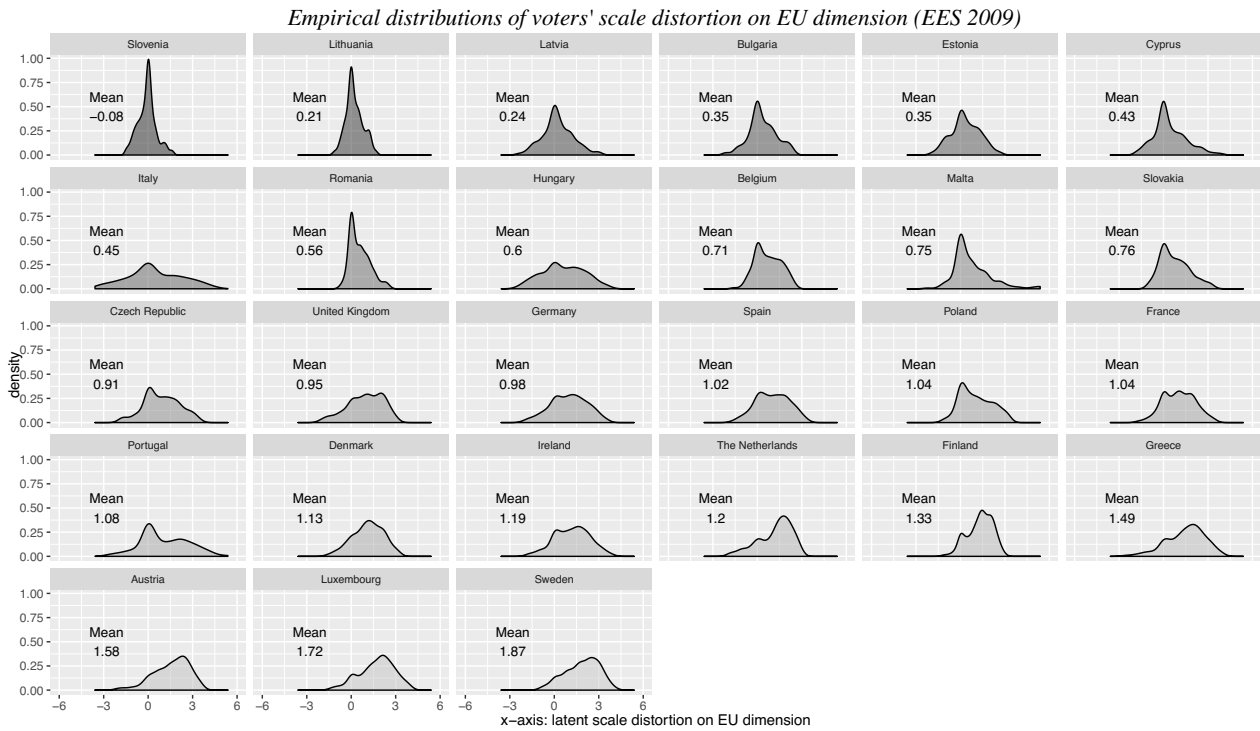
Similarly to the previous case, I plot the median values of the 2,000 posterior draws for each voter in each country. In this case too, we can detect a relatively high variation across individuals in each country (the larger the coefficients, the better able voters are to discriminate among the political parties in terms of their left-right ideology).

The heterogeneity of the shapes of these distributions is worth noting, and the impression is that the two blocks of hypotheses that explicitly develop to try to account for all this diversity are likely to represent only a first step in the study of all these perceptual distortions. In fact, the differences across countries indicate the presence of some systematic aggregate mechanism of perceptual colouring that is not explored among the empirical hypotheses and that is left for future analysis.

Finally, Figure 5.10 shows the distribution of perceptual distortion parameters for the second dimension as estimated for the 2009 elections which, once again, show the presence of a striking variation within all the European electorates.

Figure 5.10 — Distribution of voters' EU distortions (2009)





Note: the figure contains density plots representing the empirical distributions of the shift (top panel) and scale (bottom panel) distortions on the EU integration dimension as estimated through the 2S-BAM procedure disaggregated by country for 2009.

5.6.2 Voters' ideal points

Finally, we can utilize the distortion parameters to convert self-reported placements of voters into comparable scores on the European Common Space. I present voters' ideal points using three different plots, reporting respectively the left-right ideal points for 2009, the EU integration ideal points for 2009, and the left-right ideal points for 2014. The ideal points on the EU dimension in 2014 cannot be computed because of the factual error in the 2014 EES survey (documented in Section 5.1.2).

Figures 5.11–5.13 report voters' ideal points disaggregated by country. Countries are sorted from the lowest to the maximum average ideal points, although we should keep in mind that central tendencies are not equally meaningful due to the varying degrees of unimodality and dispersion in the empirical distributions of different electorates. All these ideal points are directly comparable because they are all explicitly mapped on the same basic space, so therein, we can proceed with direct comparison between voters and parties' positions.

Figure 5.11 — Voters' ideal points on the left-right dimension (EES 2009)

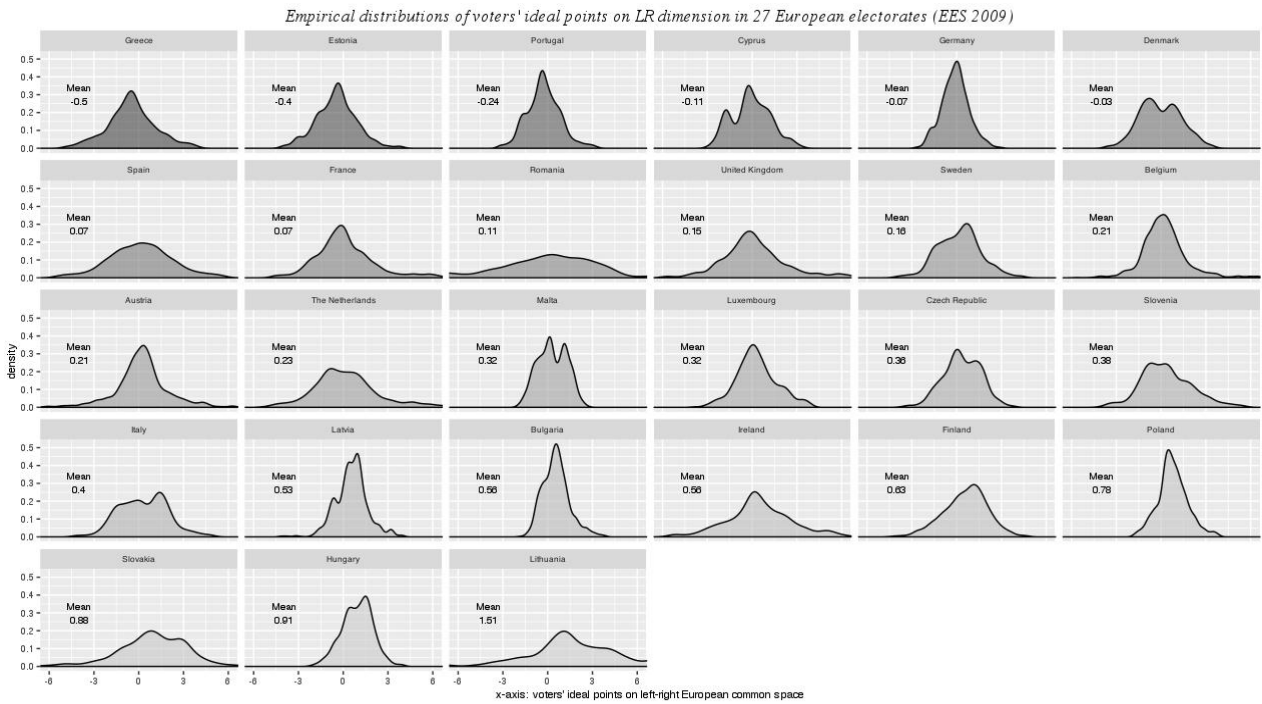


Figure 5.12 — Voters ideal points on the EU integration dimension (EES 2009)

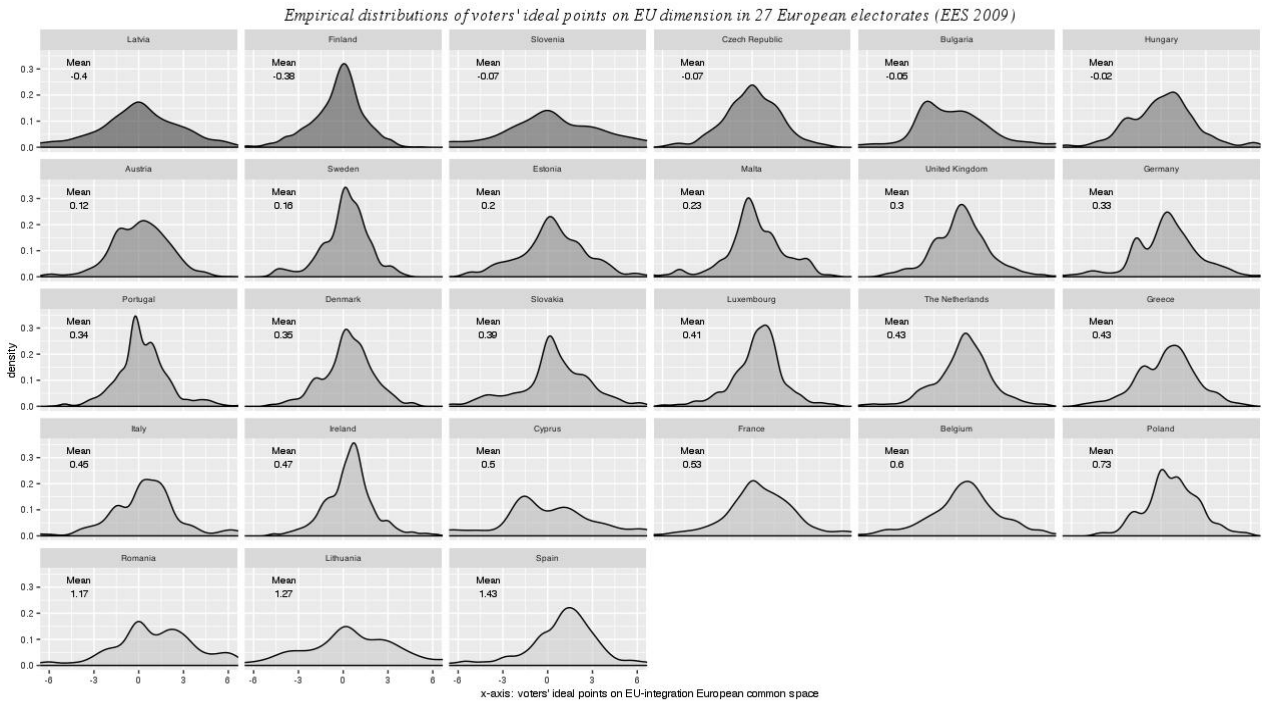
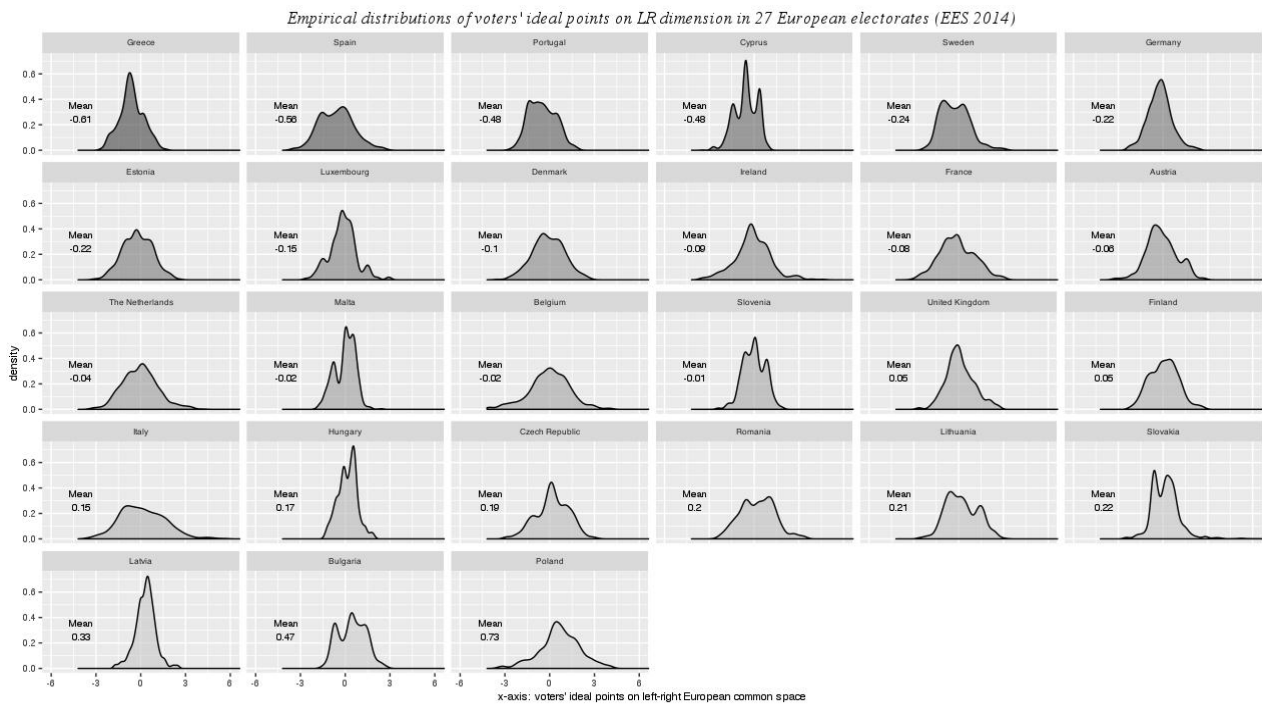


Figure 5.13 — Voters' ideal points on the left-right dimension (EES 2014)



Note: the figure contains density plots representing the empirical distributions of the voters' ideal points for the left-right dimension (2009 and 2014) and the EU integration dimension (2009) as estimated through the 2S-BAM procedure and disaggregated by country.

The ideal points are real interval-level variables, and thus also the distances between ideal points are directly comparable and meaningful. Strikingly, the empirical distributions of ideal points reveal a remarkable level of latent cross-country variation, in terms of both shape and dispersion of voter positions. Broadly speaking, and similarly to what has been observed for the United States' electorate (Lelkes 2016), the ideal points' distributions appear in most European countries as (perfectly or imperfectly) unimodal, signalling relatively low levels of overall mass polarization. However, in some cases the violations of unimodality are particularly evident, either due to small local peaks in the distribution, or because of the flat shape of the distribution. In these cases, we can argue in favour of a stronger ideological clustering and/or diversity.

As we can appreciate observing the plots, electorates' ideological distributions are very heterogeneous across Europe. In some countries, the electorate follows a leptokurtic, volcano-shaped distribution, with very thin tails and a very high central peak. In other cases, it is a platykurtic, flat distribution with heavy tails. This is particularly evident if we compare

the distributions of the first dimension between the 2009 elections, at the onset of the Great Recession, and the 2014 EP elections. In the latter case, the violations of unimodality appear magnified in some cases and visual inspection reveals various cases of flatter distributions (e.g. Spain, Portugal, Estonia, Denmark, France, Italy, Romania and Lithuania), and cases of distributions with local peaks leaning towards bi- or multi-modality (Spain, the trimodal Cyprus, to a lesser extent Sweden, Malta, Hungary, Slovakia and Bulgaria). Moreover, we learn that electorates' preference distributions are generally not symmetrical.⁴⁷

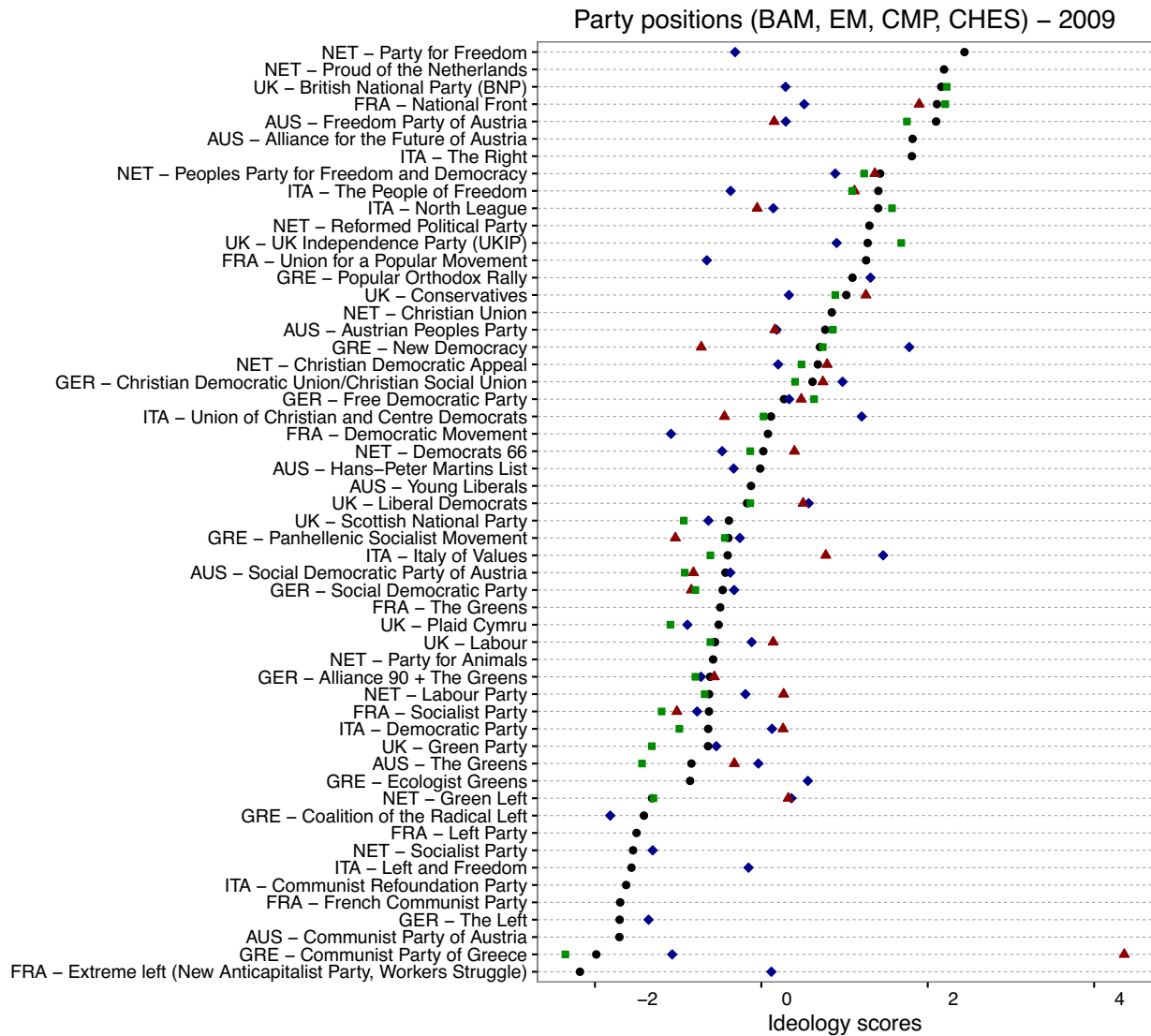
The direct comparison across countries is now meaningful as country distortions are accounted for. Thus, we can note how Eastern European countries such as Poland, Hungary, Bulgaria and Slovakia, appear both in 2009 and in 2014 left-right plots on the bottom side of the graph, meaning that a majority of voters are right-wing. Mediterranean countries, however, such as Greece, Portugal, Spain and Cyprus figure in both cases on the upper part of the graph, signalling a more left-wing orientation in these electorates.

5.6.3 Political parties' ideal points

Bayesian Aldrich-McKelvey scaling also produced ideal points for 198 political parties and movements for 2009, and 180 for 2014. In this section I show the ideal points of political parties from seven well-known Western European parties: Italy, France, Germany, the United Kingdom, the Netherlands, Austria, and Greece. The full dataset of party locations is available on request. The dot plot in Figure 5.14 shows party positions as measured by the Bayesian ideal points, together with the corresponding scores of the Comparative Manifesto Project data (the RILE index), the left-right scores of the European Manifesto Study, and finally the ratings from the CHES left-right averages. The purpose is not to convince readers of the goodness of party positions, which will be addressed in the sections on empirical validation. Instead, the aim is to show how manifesto scores do not discriminate well across countries, whilst allowing the reader to familiarize with the party ideal points. In fact, it appears that the CHES provides much more reliable and face-valid positions for political parties, and as a consequence these scores will be adopted as a benchmark in the later stage of validation.

⁴⁷ For instance, the Italian (2014) and Austrian (2014) left-right distributions resemble the stylized right-skewed distribution discussed in Downs (1957, 121).

Figure 5.14 — Left-right party positions in 2009 measured by ideal points, CMP, EM, and CHES scores



Notes: EM, CMP, and CHES scores were standardized in order to have common range with the ideal points. Political parties are sorted by the ideal points' value, with far-right parties figuring on the top, and far-left parties on the bottom part of the plot. In some cases, the values of CMP, CHES, or the EM are missing because the number of parties considered in the EES survey is larger than in the other datasets. The most credible values' intervals (or Highest Density Interval) of the ideal points are omitted so as not to overload the graphics, but all positions were precisely estimated. Black dots indicate the estimated political parties' Bayesian ideal points; blue diamonds represent the left-right score from the Euromanifesto (EM) scores; red triangles represent the CMP RILE scores; and green squares represent the Chapel Hill Expert Survey (CHES) left-right average positions.

Moreover, the dot plot also shows how the ideal points are able to discriminate, particularly across countries. In fact, visually comparing the Euromanifesto (blue diamonds) and the CMP

rile (red triangles) scores it is evident that these manifesto scores tend to largely overlap across countries. This leads to a number of unreasonable party positions. For instance, if we look at the CMP rile index (red triangles), we note that the far-right Austrian Freedom Party is located almost on 0, overlapping with the German CDU and even with the British Labour Party. The xenophobic and Eurosceptic Italian Northern League also figures close to the 0 value. This is probably the result of the inability of manifesto scores to discriminate effectively across countries; this may be inherently dependent on the coding process that considers party manifestos as separate entities. The ideal points I retrieved (black dots) leverage on voters' perceptions to discriminate within countries, and on the European Parliaments' political groups (bridging observations) to discriminate between countries.

As a consequence, the ideal points enable direct cross-country comparability, which is a highly desirable feature in comparative analyses. Although the CHES scores appear to follow the ideal points more closely, also between countries, we should not overlook two basic facts examined in the previous chapters: 1) Differential Item Functioning can still generate incomparability among the evaluations of experts from different countries (Bakker et al. 2014; King, Murray, Salomon and Tandon 2004); and 2) the ideal points are the only scores that are mapped onto the same basic space of voters, while directly comparing CHES scores and voters' scores (e.g. to compute policy distances) still relies on the assumption of metric homogeneity. Finally, the dot plot also highlights a third advantage: the number of parties included in the EES is larger than the number considered in any of the other datasets. This is not a minor point, as the non-random omission of political parties can also bias the indices of ideological polarization, especially if smaller and more extreme parties are omitted.

It appears that the ideal points discriminate well among European parties. By observing the ideal points, we can almost distinguish the party families by visualizing the scores. On the top part of the figure, we find all the political parties that are normally identified as far-right: the Dutch Freedom Party, the British National Party, the French National Front, the Austrian Freedom Party, and the Italian The Right. Next, we observe a tiny step in the distribution, and the set of parties that follow are those normally characterized as conservative. This set includes the Italian Forward Italy, the British UKIP, the Conservative Party, and the French UMP.

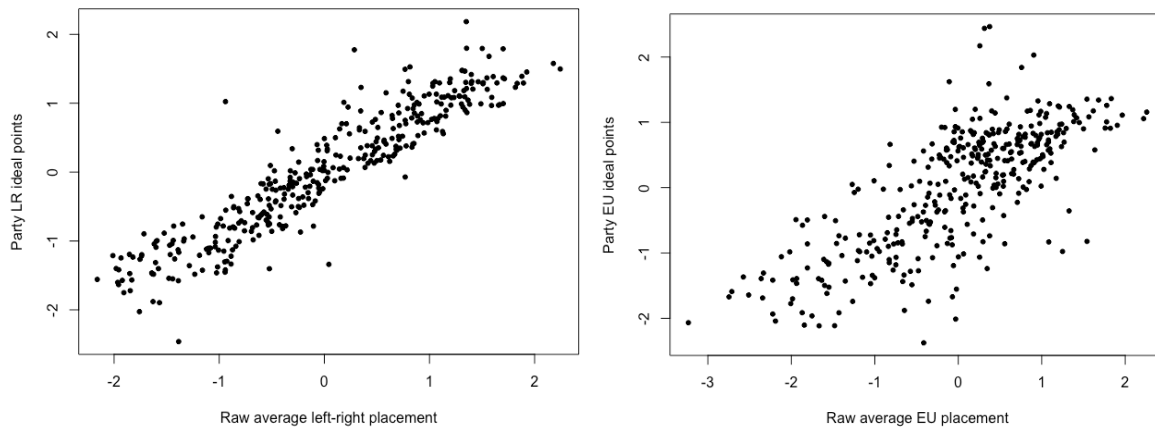
In some cases, the index seems to be unreasonable, but there usually appears to be a plausible explanation. For instance, this would be the case of the far-right Northern League, which appears on the same position as Forward Italy and the Dutch VVD. It may seem that the NL should instead be closer to the Dutch PVV. Yet, in 2009 the Northern League took part in a coalition government with Berlusconi's party. Thus, it seems reasonable that voters will perceive these two parties as being in the same ideological position. In this sense, the discrepancies between the experts' values (e.g. FI slightly to the left of the corresponding ideal point, and the NL slightly to the right) and voters' perceptions may be due to the fact that they simply evaluate the current political scenarios, whilst experts, relying on their deeper political and historical knowledge, may abstract from the current circumstances to provide a long-term evaluation.

Proceeding further among the political blocks, we note that between the two German parties CDU and the FDP there is another step that seems to separate the conservative and the liberal party families. Another gap can be visually identified between the English Liberal Democrats and the Greek Socialists (PASOK), that reasonably limits liberal and socialist parties. Finally, the bottom block of parties includes parties of the radical left.

The next Figure 5.15, finally, provides a panoramic view of the relationship between the raw average party placements and the 2S-BAM ideal points. The left-side of the plot refers to the left-right dimension and the right-side to the positions on the European integration dimension.

As the plots show, the relationship on the first dimension appears to be somewhat stronger as compared to the second one. This probably relates to a larger random-guessing behaviour on this second dimension, where voters may have less information to discriminate among parties. In particular, this may depend on the fact that while in terms of the left-right parties are generally distributed to cover the whole continuum, on the second dimension it is frequently the case that party systems have one single party contesting Europe and the other parties being relatively pro-European. The discrimination among these pro-European parties can prove to be challenging, and therefore it is likely to generate an increase in random-guessing.

Figure 5.15 — Party positions measured with raw average placements and 2S-BAM ideal points



Notes: the two plots show the relationship between the raw average placement of political parties (X-axis) and the party 2S-BAM ideal point scores (Y-axis). The left-side represents the values for the left-right dimension, while the right-side refers to the positions in terms of the European integration issue.

The ideal point scores should be seen as a central tendency of posterior draws, providing information about a position. Instead, they do not allow for statements about the rank order, such as: ‘Party X is on the right of party Y’, or ‘Party Z is the most left-wing party’. These are not statements about a party’s position, but about its ranking. Thus, to produce valid rank-order statistics, we must randomly draw one realization of the ideal points for each party and then elaborate the ranking. Next, this should be repeated for a sufficient number of iterations, and finally we can count the number of times in which one party scores e.g. first in the ranking. I will not operate this procedure as this is not the central focus of the thesis, but it could be helpful advice for researchers working with ideal points on different questions.

5.6.4 Country-specific distortion parameters

The second stage of the 2S-BAM procedure (Chapter 4, Equations 4.13–4.23) allows us to bridge all the national basic spaces. As previously explained, this is achieved by exploiting the European Parliament’s political groups as bridging information that enables the estimation of country-specific distortions. Moreover, the estimation process produces as a by-product the latent positions of the political groups in the European Parliament that were used as anchors.

Table 5.2 presents the country-level shift and scale distortion parameters that were estimated. Thus, exerting leverage on the membership of national political parties in the EP political groups we can illuminate the source of bias stemming from cross-country incomparability. For each of the parameters shown the MCMC approach naturally produces uncertainty estimates arising from the simulations draws. I omit the uncertainty measures to facilitate readership, although all the parameters were precisely estimated.⁴⁸

As it appears, European countries' latent spaces are not perfectly overlapping as is conventionally assumed. Instead, the variation in the coefficients reported in Table 5.2 seems to confirm that the various policy spaces have different origins and distance metric. The heterogeneity observed for individuals in the first stage of the model is also observed for European countries. Where different political values, in-group ideological identification, and levels of political knowledge are likely to produce latent mismatches in voters' policy spaces, different historical, cultural, and political backgrounds are likely to produce mismatches in national policy spaces. The individual distortions are systematically explained in the next chapter, and a pathway to explore systematically country-specific distortions is given in section 7.3.3, although the study of these macro-level distortions will not be undertaken in this thesis. The main problem would be represented by the low number of aggregate cases. We can interpret these estimates in much the same way as the individual case, although the substantive information we obtain is rather different. In the individual case, we were dealing with proper perceptions of a political actor which, even considering all the potential internal heterogeneity, divisions into factions and the like, exists as such objectively and it is reasonable to think of its ideal position as a fixed value averaging internal components. This may not be case when dealing with countries and European parties.

Let us consider for instance the first left-right dimension: Table 5.2 presents a block of Eastern and Baltic European countries including Poland, Bulgaria, Latvia, Slovakia, Romania, Hungary and Lithuania and to a lesser extent Austria which 'perceive' European party groups as having shifted too much to the left than is actually the case (i.e. more than what their ideal

⁴⁸ In a frequentist setting, the standard errors for country-level parameters can be achieved through a nonparametric bootstrap: the researcher should resample with replacement the individual respondents and re-estimate the first step of the Aldrich-McKelvey scaling (i.e. the individual-level model that produces the parties' ideal points), and then use these set of political parties' ideal points to produce multiple estimates of the second stage of the scaling model.

Table 5.2 – Country-specific DIF distortion parameters

Country	2009				2014			
	country distortions				country distortions			
	$c_{k,LR}$	$d_{k,LR}$	$c_{k,EU}$	$d_{k,EU}$	$c_{k,LR}$	$d_{k,LR}$	$c_{k,EU}$	$d_{k,EU}$
Austria	-0.151	0.770	0.136	0.818	-0.158	0.973	-0.269	0.826
Belgium	-0.268	1.077	0.308	0.374	-0.017	0.926	-0.421	0.991
Bulgaria	-1.022	1.718	-0.070	0.604	-0.447	1.444	0.057	0.921
Cyprus	0.266	1.113	-0.817	1.289	0.940	1.694	-1.075	1.425
Czech Republic	0.056	0.839	-0.721	0.501	-0.075	0.955	0.112	0.440
Denmark	-0.093	0.990	-0.231	0.852	0.172	1.216	-0.989	1.459
Estonia	0.386	1.063	-0.109	0.486	0.340	1.168	-0.440	1.049
Finland	-0.305	0.890	-0.291	0.764	0.035	1.314	-0.706	0.987
France	0.257	0.674	-0.006	0.851	0.104	0.893	-0.096	0.910
Germany	0.422	1.113	-0.701	1.246	0.442	1.389	-0.477	0.769
Greece	0.396	0.835	-0.116	1.051	0.575	1.176	-0.403	1.024
Hungary	-0.468	1.018	0.081	0.741	0.289	1.739	-0.371	1.067
Ireland	-0.092	0.862	-0.358	0.975	0.504	1.068	-0.632	1.166
Italy	-0.047	0.738	-0.153	0.621	-0.449	0.837	-0.226	0.795
Latvia	-0.407	1.222	-0.572	1.060	0.018	1.693	-0.570	0.875
Lithuania	-0.784	0.710	-0.049	0.803	-0.164	1.277	-0.140	0.865
Luxembourg	0.287	0.920	0.013	0.979	0.301	1.225	-0.477	0.513
Malta	-0.163	1.271	-0.012	0.840	0.029	1.482	-0.774	1.104
Poland	-0.599	1.346	0.499	0.195	-0.491	1.051	-0.159	0.758
Portugal	0.429	0.849	-0.290	0.979	0.424	1.002	-0.712	0.922
Romania	-0.368	0.591	-0.155	0.642	-0.474	1.606	0.144	0.673
Slovakia	-0.502	0.658	-0.693	0.865	-1.016	2.269	0.016	0.697
Slovenia	-0.473	1.031	-0.255	0.756	-0.037	1.682	-0.100	0.468
Spain	0.138	0.879	0.626	0.500	0.492	1.051	-0.539	1.178
Sweden	-0.179	0.982	-0.492	0.941	0.056	1.276	-0.740	1.101
The Netherlands	-0.325	0.738	0.268	0.569	-0.017	0.955	-0.484	1.025
United Kingdom	-0.258	0.940	-0.006	0.883	0.218	1.650	-0.834	1.382

Notes: table entries are the country-specific Differential Item Functioning (DIF) distortion parameters estimated for the 2009 and the 2014 EP elections. For each of these two elections, four country-specific distortion parameters are presented. Respectively: the lateral shift distortion on the left-right dimension ($c_{k,LR}$); the shape distortion on the left-right dimension ($d_{k,LR}$); the lateral shift on the integration/demarcation dimension ($c_{k,EU}$); the shape distortion on the integration/demarcation dimension ($d_{k,EU}$). European Parliament political groups are used as bridging observations to estimate these distortion parameters and retrieve the European Common Space. The estimation procedure is detailed in Chapter 4 and described by equations 4.13a–4.14.

points are actually estimated to be, assuming the existence of a fixed objective ideological position of EP political groups, as in the logic of the Aldrich-McKelvey algorithm).

These country-level shift distortions suggest that the origins of political spaces of these Eastern European countries are systematically shifted to the right with respect to the European Common Space. Conversely, some Mediterranean countries such as Greece, Spain and Portugal display a systematic lateral shift of EP groups to the right, meaning that their ideological spaces are latently shifted to the left with respect to the Common European Space. Does this mean that Eastern countries distort the scale because they perceive their parties as too conservative, or because that they are in fact more conservative and that European party groups do not expel their members even if they are widely ideologically divergent? While retaining the estimated results as a first source of Europe-wide comparable ideal points, future research should try to clarify these diverging interpretations.

Having obtained the country-specific DIF distortion parameters, we could easily compute as linear transformations a set of quantities of interest for various applied political questions. For instance, we may want to observe the position of the median voter in the various countries in a comparable setting. For each country, we could use the position of the median voter's ideal point estimated in the first stage. Under the assumption of unimodality, that can now be visually checked, we can rescale the country-specific ideal point of the median voter in each country.

The reader should note that, unlike the standard applications of self-reported left-right positions, with the 2S-BAM the median voter is uniquely identified and associated with a single interval-level value. Thus, we could also compute the ideological centre of party systems by computing the weighted average position of political parties in each country. By comparing this median position on the demand and supply side of the political system we could also observe potential mismatches in the political market. Yet, having shown just how imperfectly unimodal the previously unobserved interval-valued distributions of the electorates are in reality, now the empirical validity of a concept such as 'median voter' also seems less reasonable. We should instead first observe the whole distribution, such as those I previously presented, as violations of unimodality occur empirically.

5.6.5 Ideal points of the European Parliament's political groups

As a by-product of the estimation procedure, the 2S-BAM procedure produces the ideal points of the European groups in the Parliament, used as bridging observations.⁴⁹ Tables 5.3 and 5.4 report the estimated ideal points of the European Parliament's political groups together with the lower and upper bounds of the Bayesian credibility intervals.

Table 5.3 — Left-right and EU integration ideal points for European Parliament's political groups, EP 2009 elections

EP political group	Left-right dimension			EU integration dimension		
	Ideal point ($z_{m,LR}$)	Lower bound	Upper bound	Ideal point ($z_{m,EU}$)	Lower bound	Upper bound
Europe of Freedom and Democracy	1.130	0.870	1.364	-0.903	-1.389	-0.366
Non-Inscricts (right-wing)	1.021	0.713	1.329	-0.884	-1.540	-0.237
European People's Party	0.898	0.707	1.064	1.117	0.937	1.303
Alliance of Liberals and Democrats for Europe	0.312	0.140	0.473	0.982	0.830	1.140
European Greens/ European Free Alliance	-0.518	-0.686	-0.352	0.632	0.444	0.799
Party of European Socialists	-0.579	-0.704	-0.451	0.910	0.790	1.022
Non-Inscricts (left-wing)	-0.634	-1.040	-0.191	-1.048	-1.357	-0.712
European United Left/ Nordic Green Left	-1.635	-1.815	-1.452	-0.812	-1.088	-0.547

Notes: the left-right and the EU integration ideal points were estimated in the second-stage of the Bayesian Aldrich-McKelvey scaling model described in Chapter 4. The left side of the table reports the ideal points on the left-right dimension together with lower and the upper bound of the 95% Bayesian Highest Density Interval, indicating the most credible values of the posterior distributions of the ideal points. The right side of the table reports the EU integration ideal points and the corresponding uncertainty measures. EP political groups are sorted decreasingly by the values of the left-right ideal point.

⁴⁹ The homogeneity assumption would have been likely violated in the case of the group of Non-Inscricts. Thus, as previously explained, I proceeded separating the unambiguously right-wing from the left-wing Non-Inscricts political parties and movements. For instance, the right-wing Non-Inscricts in 2009 include the Austrian Freedom party, the Belgian Flemish Interest, the Bulgarian Attack, and the French National Front, while the left-wing in the same election include the Workers' Party of Belgium, the Anticapitalist Party of France, and the Communist Party of Luxembourg. Thus, I could estimate the latent positions for eight EP groups in the 2009 elections, and for ten groups in the 2014 EP elections.

Table 5.4 — Left-right and EU integration ideal points for European Parliament's political groups, EP 2014 elections

EP political group	Left-right dimension			EU integration dimension		
	Ideal point ($z_{m,LR}$)	Lower bound	Upper bound	Ideal point ($z_{m,EU}$)	Lower bound	Upper bound
Europe of Nations and Freedom	1.471	1.205	1.726	-1.420	-1.755	-1.016
Europe of Freedom and Direct Democracy	0.734	0.514	0.945	-0.858	-1.156	-0.501
Non-Inscricts (right)	0.650	0.206	1.232	-1.042	-1.445	-0.608
European People's Party	0.616	0.471	0.759	1.229	1.052	1.394
European Conservatives and Reformists	0.582	0.423	0.722	-0.134	-0.615	0.257
Alliance of Liberals and Democrats for Europe	0.052	-0.128	0.217	1.148	1.006	1.309
European Greens/European Free Alliance	-0.560	-0.706	-0.420	0.838	0.691	0.975
Progressive Alliance of Socialists and Democrats	-0.619	-0.708	-0.539	1.023	0.875	1.179
European United Left-Nordic Green Left	-1.420	-1.531	-1.304	-0.334	-0.700	0.012
Non-Inscricts (left)	-1.517	-1.671	-1.360	-0.478	-1.003	0.105

Notes: the left-right and the EU integration ideal points were estimated in the second-stage of the Bayesian Aldrich-McKelvey scaling model described in Chapter 4. The left side of the table reports the ideal points on the left-right dimension together with lower and the upper bound of the 95% Bayesian Highest Density Interval, indicating the most credible values of the posterior distributions of the ideal points. The right side of the table reports the EU integration ideal points and the corresponding uncertainty measures. EP political groups are sorted decreasingly by the values of the left-right ideal point.

The estimated ideal points of EP political groups would pass the face validity test. At the 2009 EP elections, the most right-wing European Parliament political groups appear to be Europe of Freedom and Democracy (EFD) and the Non-Inscricts. These are also the two most Eurosceptic EP groups, together with the Non-Inscricts of the left and the radical-left European United Left. In 2014, the most right-wing and Eurosceptic group was the newly formed Europe of Nations and Freedom, that includes various far-right parties such as the French National Front, the Dutch Freedom Party, the Austrian Freedom Party, and the

Belgian Flemish Interest. Conversely, the most left-wing groups are the European United Left and the Non-Inscrits of the left. In 2014 the latter represent the most left-wing EP group. In fact, the main left-wing Non-Inscrit political alliance in 2014 was represented by the Initiative of Communist and Workers' Parties, an anti-system Marxist-Leninist alliance.

On the basis of these scores, we can clarify that the 'bipolar-Euroscepticism' thesis (Marks, Hooghe, Nelson and Edwards 2006) also applies to the EP groups, with the mainstream, moderate, political groups (Socialists and Democrats, the Popular Party, and the Alliance of Liberal and Democrats) being the most supportive of European integration. Nevertheless, the 2S-BAM scores also suggest that, while in 2009 radical left political groups were about as Eurosceptic as the right-wing EP groups, in 2014 it seems that the far-right has won a (near) monopoly of Euroscepticism, with far-right groups assuming far more Eurosceptic scores than the groups of the left.

Finally, the fact that the rank order appears to be correct further lends support to the entire second stage of the model, because these estimates were simultaneously produced with the country-specific distortions' parameters. Undoubtedly, a face-validity test in the latter case would be far more ambiguous.

5.7 Validating the new measures

The validation of the 2S-BAM measures is complicated by the high number of parameters that were produced, and that should consequently be validated⁵⁰. Some parameters (e.g. party ideal points, EP groups' ideal points) are easier to validate than others for which we have no reasonable benchmark (voters' and country-level distortion parameters). With this in mind, I designed a set of validation tests that attempt to validate directly or indirectly all these parameters.

⁵⁰ To recap, the parameters demanding empirical scrutiny in the first stage, include: 1) two perceptual distortion parameters for each voter and each dimension; 2) one ideal point representing the latent policy position for each party and for each of the two dimensions; next, in the second stage, we add: 3) two country-level distortion parameters for each country and for each of the two dimensions; and 4) one ideal point of the latent position of the political groups in the European Parliament for each dimension (see Tables 5.3 and 5.4).

There are three main criteria that can be used to establish the validity of a new measure: construct, convergent and criterion (or predictive) validity. I will rely on the second and on the third validity criteria⁵¹.

Convergent validity is a content validity test, where a new measure (the ideal points in our case) is evaluated in the light of a benchmark construct taken to represent the correct measurement, against another (well-known) measure. The criterion (or predictive) validity works by comparing two measures in terms of their predictive value on an outcome variable. In our case, we can use the most basic proposition of the spatial voting theory: voters' support political parties that are ideologically closer to their own positions. Therefore, I test two predictors of voting propensities: the first is based on the standard left-right positions and the second one computes the distances among the ideal points distances of voters and parties. Finally, the two predictors are compared in terms of how well they predict individual vote preferences.

An important element that could threaten the convergent validity test is the precision of the benchmark measure. The choice of a benchmark for party positions would basically fall on three potential sources: 1) measures of MPs/MEPs legislative behaviour (Hix, Noury and Roland 2006), expert surveys (Bakker *et al.* 2015), and manifesto scores (Klingemann *et al.* 2006). The first choice consists of computing ideology scores for MPs and then aggregating these scores by party. Yet, most of the amendments and proposals on issues relevant for the left-right ideology are arguably discussed in national legislatures, but a harmonized source of roll-call votes in the national parliaments for the European parties has not been produced to date. We could thus resort to the votes in the European Parliament and estimate a two-dimensional IRT model. Yet, this would then lead to the fundamental issue of construct validity of these scores: to what extent the scores of the first dimension would be truly measuring the left-right position and those of the second the position on EU integration? This first solution would thus probably represent the poorest one. The second solution involves the perception of the experts. On the weakness of expert surveys see section 3.7: they are

⁵¹ Construct validity works by testing whether the proposed measure correlates with the construct that it claims to measure. This is particularly important in the case of inductive synthetic scores such as ideology scores from roll-call votes (see section 3.3.1). In the deductive approach followed in this study, we use questions that explicitly ask voters about positions of left-right ideology and EU integration. Therefore, we can reasonably assume that left-right ideology and EU integration are indeed the constructs that are measured by the estimated ideal points.

subject to the problem of cultural specificity, of a similar kind of the incomparability across country type. Scholars have widely discussed and demonstrated the problem and called for the adoption of anchoring vignettes or other bridging techniques to amend this issue (Bakker, Jolly and Polk 2012; King, Murray, Salomon and Tandon 2004; King and Wand 2007). Moreover, we have also discussed (see section 3.3.3) the problem that experts may rate parties' position-image, which in turn may diverge from the voters' position-perception. Nevertheless, expert surveys provide a solid benchmark as within-country measure, and Figure 5.13 also lends support to the CHES scores. Finally, there is the option offered by Manifesto scores (such as Comparative Manifesto Project). The basic problem is that CMP data is based on the theory of issue saliency, a theory that does not require directional positions. In practice, CMP scores can actually represent directionality, but it would still remain a striking completely orthogonal theoretical perspective:

The saliency theory of party competition is the one the manifesto codes and estimates are based on [...]. Party strategists see electors as overwhelmingly favouring one course of action on most issues. Hence all party programmes endorse the same position, with only minor exceptions. (Budge 2001, 76, 82)

Researchers using Manifesto scores for left-right positions (i.e. the RILE score), should be aware that these scores are produced on the background of a theoretical context that assumes that most parties share the same position on issues. An additional element running against the manifesto scores is also their very poor performance in Figure 5.13. Therefore, I decide to opt for the CHES scores as benchmark measure to validate the political parties' ideal points.

In conclusion, my validation effort rests on four different tests. First, I will use CHES as a benchmark, and compare the strength of the statistical association between these scores and the standard DIF-inflated measure of party positions as perceived by voters (i.e. average voters' reported perception), on the one hand, and the estimated ideal points on the other. This provides a first validation test for the political parties' ideal points, although in terms of rank-order. Second, I again compare standard average perceptions and party ideal points by looking at party positions as interval measures. I follow this perspective adopting the Root Mean Squared Error (RMSE) as validation criterion, further disaggregating the measure country-by-country. This represents a test of party ideal points as interval measure. Third, I

resort to the only existing data source of DIF-corrected experts' rating of party positions for the European parties (Bakker, Jolly, Polk and Poole 2014) to show that the ideal points on the European Common Space outperform the country-specific ideal points. The latter aims at providing an indirect test of the country-level distortion parameters, in the sense that we expect the political parties' ideal points produced after the second stage of the model (i.e. after bridging across countries) to outperform the first-stage ideal points (i.e. only correcting for individual DIF). Fourth, and finally, I produce supportive evidence for the ideal points in the form of predictive validity, relying on the basic proposition of spatial voting theory that voters should assign greater propensity to vote for ideologically closer political parties. This last test is designed to provide an indirect test of the individual-level distortion parameters, although it actually simultaneously tests both voters and parties' ideal points. All these tests are presented in the remainder of the section.

5.7.1 Comparing rank-order correlations

As a first test, I compare the CHES scores of political parties' position on the left-right dimension and on EU integration with the corresponding scores that were estimated on the European Common Space. As a reference measure, I use the standard measure of party positions: the average reported individual perception of party positions, considering the entire pool of voters.

Table 5.5 presents the Spearman rank-order correlation coefficients between the CHES party scores and respectively the standard measure of party positions, measured by the average voters' reported position, and the ideal points' measure of party positions. The Spearman coefficient would assume value $\rho = 1$ in case of perfect monotonicity, and thus it measures the rank-order of party positions. This is different from the Pearson correlation in that it does not require linearity in the association between the two variables.

Table 5.5 — Spearman rank-order correlation coefficients of standard and ideal points' measures of party positions

Spearman ρ correlation with CHES scores	2009		2014	
	Left-right	EU integration	Left-right	EU integration
Raw average placement	0.88	0.61	0.91	0.60
Ideal points	0.91	0.62	0.93	0.68
N	93	93	94	94

Table entries represent Spearman rank-order correlation coefficients computed with the CHES party positions. All p -values testing the null hypothesis of zero correlation are significant at $p < 0.001$ level. Missing party scores in the CHES data reduce the sample size to about the half of the total sample size (196 observations in 2009, and 180 in 2014). Ideal points correct for individual as well as for country distortions.

Unfortunately, the CHES data provides a benchmark for only a subset of the entire distribution of party positions that was estimated through the 2S-BAM procedure. For the subset that is considered, the correlation coefficients show that the ideal points' rank-order of party positions is slightly closer to the rank-order of CHES data. There appears to be a minor yet consistent improvement for both dimensions and elections that are considered: in all four cases the ideal points gets closer to the benchmark measure, with the most sizeable change observed for the EU integration dimension in 2014 (where the raw placements are correlated at 0.60, while the deal points at 0.68).

The largest improvement in party scores is not expected in the order of party positions. Nevertheless, the minor improvement visible in Table 5.5 should not be underestimated: rank misplacements related to DIF have been shown to originate the initial puzzles regarding party rankings in Italy and in the United Kingdom (see sections 1.1 and 5.5 where the initial puzzle is solved). Thus, the slight improvement in the rank-order correlations means in fact that the two distributions are producing the same ranking most of the time, but in some cases the ranking of party positions is altered in the distribution of raw averages of party perceptions.

Yet, these would correspond to rather extreme cases of DIF distortions, while it is likely that in most of the cases perceptual bias would produce misplacement of party positions that do not lead to modifications to the rank-order. This is investigated in the next subsection.

5.7.2 Comparing Root-Mean-Square Errors (RMSE)

Having shown that the ideal points were able to improve, slightly but consistently, the ranking of party positions, we can now test whether they further improve the accuracy of party positions. This validation test looks at the ideal points for what they in fact are: interval-valued measures of party positions.

This approach focuses on the numeric values that describe party positions instead of the rank order of parties. Thus, we can evaluate the size of the deviation from the CHES scores, even conditioned on the same ranking of positions. Moreover, we can also consider the countries separately, in order to understand in which specific cases the values of the ideal points are closer/further from the CHES score. The Root-Mean-Squared Error of our tested measures (θ) with respect to the benchmark measure (θ_{CHES}) is defined by the following formula:

$$RMSE = \sqrt{E[(\theta_{CHES} - \theta)^2]}.$$

To map all the values on the same metric, all the three distributions (CHES scores, average party placements, ideal points) have been previously standardized. Tables 5.6 (reporting RMSEs for 2009) and 5.7 (for 2014) reports for each country the computed values of the RMSE. To make the computation of within-country RMSE meaningful, I only include countries for which CHES provides the positions for at least three parties.

The validation exercise again suggests that the ideal points are slightly, but consistently, better than the standard raw average of parties' perceived positions. The sum of the RMSE across all available countries shows that in both elections years, and in both the policy dimensions, the ideal points are closer to the benchmark than the raw average party placements.

Table 5.6 — Root-Mean-Squared Errors of standard averages and ideal points' measures of party positions by country, EES 2009

Country	Left-right ideology			EU integration		
	Standard Average	Ideal points	Difference	Standard Average	Ideal points	Difference
Austria	0.091	0.154	-0.062	0.119	0.144	-0.026
Belgium	0.391	0.397	-0.006	1.174	1.205	-0.032
Czech Republic	0.105	0.071	0.034	1.068	1.219	-0.151
Denmark	0.165	0.146	0.019	1.060	0.546	0.514
Finland	0.238	0.177	0.061	0.537	0.565	-0.028
Germany	0.398	0.325	0.073	1.522	1.325	0.197
Ireland	0.220	0.261	-0.041	0.113	0.194	-0.081
Italy	0.202	0.151	0.052	0.416	0.328	0.088
Slovakia	0.753	0.769	-0.016	0.693	0.820	-0.127
Spain	0.195	0.135	0.060	0.201	0.359	-0.158
Sweden	0.231	0.202	0.029	0.198	0.131	0.067
The Netherlands	0.097	0.031	0.067	0.943	0.781	0.162
United Kingdom	0.559	0.196	0.363	0.783	0.556	0.227
Total	-	-	0.633	-	-	0.654

Notes: table entries represent for each country available the sum over parties of the mean squared distance between standard average reported perception of party position and the party ideal points for both the left-right (columns 1 and 2), and the EU integration (columns 4 and 5) dimensions. Columns 3 and 5 show the difference between the reported RMSE of the standard averages and of the ideal points (bold font emphasizes values larger than |0.1|).

Table 5.7 — Root-Mean-Squared Errors of standard averages and ideal points' measures of party positions by country, EES 2014

Country	Left-right ideology			EU integration		
	Standard Average	Ideal points	Country	Standard Average	Ideal points	Country
Austria	0.253	0.219	0.034	0.198	0.102	0.095
Belgium	0.658	0.189	0.469	0.437	0.369	0.068
Czech Republic	0.142	0.161	-0.019	0.605	0.726	-0.121
Denmark	0.168	0.134	0.034	0.332	0.178	0.154
Finland	0.196	0.147	0.049	0.498	0.559	-0.060
Germany	0.373	0.245	0.127	0.256	0.340	-0.083
Ireland	0.237	0.178	0.059	0.398	0.401	-0.003
Poland	0.149	0.071	0.078	0.334	0.225	0.109
Slovakia	0.132	0.160	-0.028	1.410	1.139	0.271

Spain	0.233	0.273	-0.040	1.137	0.514	0.623
Sweden	0.233	0.212	0.021	0.288	0.25	0.039
The Netherlands	0.099	0.126	-0.027	1.103	1.152	-0.049
United Kingdom	0.369	0.227	0.141	0.404	0.239	0.164
Total	-	-	0.899	-	-	1.206

Notes: table entries represent for each country available the sum over parties of the mean squared distance between standard average reported perception of party position and the party ideal points for both the left-right (columns 1 and 2), and the EU integration (columns 4 and 5) dimensions. Columns 3 and 5 show the difference between the reported RMSE of the standard averages and of the ideal points (bold font emphasizes values larger than |0.1|).

We start commenting on the left-right scores. If we exclude minor differences (i.e. less than |0.1|), we can see that in no case do the left-right ideal points perform worse than the standard measure of average reported left-right position. Moreover, in some cases we can also note substantial reductions in the RMSE due to the scaling model. The 2009 case of the United Kingdom has been already discussed at length, but we can now also appreciate the 2014 cases of Belgium, Luxembourg, Germany and again the United Kingdom.

In Belgium, the biggest change involves the Christian Democratic and Flemish Party (CD&V): the party of Herman Van Rompuy, former President of the European Council, is a centrist and moderate Christian-Democratic party that belongs to the European People's Party. Its average expert left-right position in the CHES is 5.4 (on a scale of 0 to 10), which corresponds to a standardized score of 0.03. To contextualise, the Socialist Party Differently (SPA) has an average CHES rating of 3.0, corresponding to a standardized score of -1.13 . Now, the average (standardized) raw left-right placement by the voters for CD&V is -0.52 , which would place CD&V on the *left* of the Socialist Party Differently that, in turn, is rated with an average left-right perception of -0.23 . The ideal points for the CD&V and for the SPD are respectively 0.14 and -0.78 , thus closer to the benchmark and restoring the correct rank-order.

In Germany, the CHES scores position CDU/CSU on 5.9, the liberals of the FDP on 6.5, and the far-right AfD on 8.9. Now, the voters' standardized average perceptions are respectively 1.4 for CDU, 0.6 (FDP), and 1.6 (AfD), thus with the CDU/CSU seemingly positioned very close to AfD. Finally, the estimated ideal points are 0.8 (CDU), 0.6 (FDP), and 1.3 (AfD), with CDU/CSU positioned closer to FDP than to AfD. Thus, in this case the rank-order between the raw left-right average perception and the ideal points is not reversed, although in both cases it differs

from the rank offered by the experts: for them the correct party order (from left to right) would be $CDU/CSU > FDP > AfD$, whereas, with both the standard and the 2S-BAM measures, voters perceive this sequence as $FDP > CDU/CSU > AfD$. The difference lies in the fact that the standard measure is artificially pushing the CDU/CSU too far on the right, close to the position of AfD. The 2S-BAM scores reveal that this ‘closeness’ between the CDU/CSU and AfD is spuriously driven by differential-item functioning: once DIF is taken into account the CDU/CSU is pulled back to the centre. In the light of the results presented in the next chapter, showing that the ideological position of voters produces a latent shift on the opposite dimension, I can speculate that the erroneous shift of the CDU/CSU on the right is probably produced by the fact that left-wing German voters place the party on their own projection of the German party system, where parties are shifted to the right. Yet, once a centre-right party like CDU/CSU is already placed close to the endpoint, there is little space to discriminate between more extreme parties such as the AfD.

The German case is also a useful exercise because it reminds us of the different interpretation of the left-right ideology as basically an economic dimension for experts (with the CDU/CSU to the left of the FDP), and as a more general economic and also cultural-symbolic dimension for voters (with the FDP to the left of CDU/CSU). This should also encourage students of voting behaviour to consider the potential flaw of comparing voters’ self-reported left-right position with the experts’ coding of party positions.

In Luxembourg, experts place the Democratic Party (member of the ALDE group in the EP) on 5.0, the Christian Social People’s Party (EPP group in the EP) on 6.5, and finally the Alternative Democratic Reform Party (European of Conservative and Reformists group) on 8.0. The raw average of voters’ reported left-right placements is respectively 0.80 (DP), 1.70 (CSP), and 1.16 (ADR). Thus, if one looks at the DIF-inflated averages, the right-wing party in Luxembourg would be the Christian Social People’s Party rather than the national conservative ADR. Yet, once we correct for DIF through the 2S-BAM scores the ideal points re-establish the correct rank-order: 0.30 (DP), 0.85 (CSP), and 1.15 (ADR).

Finally, in the United Kingdom the DIF-inflated scores in 2014 flip the positions of the Conservative Party and UKIP again. The CHES averages are 7.0 (Conservatives) and 9.14 (UKIP). The raw average placements are 2.06 (Con), and 1.85 (UKIP), whereas the ideal points are 1.29 (Cons), and 1.52 (UKIP).

With respect to the EU integration dimension, we can observe an overall improvement in the measures of party positions with the 2S-BAM ideal points. In particular, in 2009, there are sizeable improvements for Denmark, Germany, the Netherlands and the United Kingdom. Nevertheless, in 2009 the ideal points appear to bring party positions further (but to a lesser extent) from the expert scores in the Czech Republic, Slovakia and Spain. In 2014 a worrying case would be Luxembourg.

Focusing for brevity on the cases of deterioration of party scores, the only rank-order change in 2009 is registered in Spain. Here, the CHES average scores place the Popular Party, the PSOE, and Izquierda Unida respectively on 6.0 (PPE, or moderately pro-European), 6.75 (PSOE), and 4.75 (IU). The raw average placement of the three Spanish political parties in terms of opposition/support to the European Union are 0.88 (PPE), 1.15 (PSOE), and -0.13 (IU). The ideal points instead produce the following scores: 1.33 (PPE), 1.25 (PSOE), and 0.20 (IU). Thus, correcting for DIF the PPE becomes the most pro-European Spanish party, followed by the PSOE. The ranking offered by the ideal points is defensible to the extent that voters' EU dimension indicates the 'neoliberal' side of Europe rather than the 'social' ideal of the Union. This would be in line with the fact that the estimated position for the European People's Party stands to the pro-European side of the Party of European Socialists (1.18 vs. 0.98 in 2009, 1.23 vs. 1.02 in 2014, see tables 5.3 and 5.4). Clearly, these scores can be challenged, but in the framework of a predominant reduction of the RMSE this Spanish case appears to be a minor issue.

Somewhat more worrying appears to be the case of the Czech Republic, where the additional error is driven by a sizeable shift of the Eurosceptic Civic Democratic Party towards the pro-Europe side. Experts place the Christian Democrats (CDU) on 6.50 (pro-European), Tradition, Responsibility and Prosperity (TOP09) on 6.67, the Czech Social Democratic Party (CSD) on 6.07, the Civic Democratic Party (CDP) on 2.87 (Eurosceptic), and the Communist Party on 2.73. The raw average placements are respectively -0.29 (CDU), -0.14 (TOP09), 0.12 (CSD), -0.55 (CDP), and -1.85 (CP), whereas the ideal points are: 0.47 (CDU), 0.85 (TOP09), 0.39 (CSD), 0.44 (CDP), -2.11 (CP). While correcting the positions of the CDU and of TOP09, from mildly Eurosceptic to mildly pro-European, the ideal point for the CDP appears to erroneously place the party on the pro-European side. This is probably due to the sizeable difference between the Communists and all the other parties. In fact, from the simple

averages, the CDP appears closer to the CDU than to the Communists, although the experts widely disagree. In this case, one potential explanation could be a difference between the position-perception between voters and experts, regarding the position-image of the CDP. This party was inspired by the British Conservatives and is, on the one hand, broadly supporting of the membership of the Czech Republic in the EU but, on the other hand, it joined the group of the European Conservatives and Reformists and it is moderately critical of the EU, particularly on economic grounds (the CDP introduced a flat-tax once in office). Thus, it is plausible that the country experts may emphasize the image of the party as Eurosceptic, while voters would moderate this image and shift their attention to the economic issues instead of the EU-related ones. This may be the case particularly if the experts are more pro-European than voters. In any case, this issue of the Czech Republic will be explicitly tackled, omitting it as a robustness check in the later empirical analyses.

Overall, if we look at the total sums across countries, it is evident that the empirical evidence collected in the form of RMSE deviations from the CHES experts' scores provides additional support for the adoption of the 2S-BAM ideal points. Moreover, the total RMSEs further show larger reductions in the errors in 2014 compared to 2009. This also contributes to the intuition that DIF distortions may correlate with larger polarization arising in the wake of the Euro-crisis.

Nevertheless, the validation shows a somewhat unexpected pattern of improvement: in most cases, the new party scores are not very different from the standard average left-right scores, and this may lead us to think that the whole computational task might have been unjustified. Yet, in some cases such as in the United Kingdom, DIF problems plague the raw average party placements. In all these cases the lack of DIF corrections leads to a severe measurement error, while party ideal points perform substantially better. We may think of this as a random error problem, mainly leading to some attenuation bias. Unfortunately, as I show in the Chapter 6, DIF problems are systematically correlated with important individual and aggregate political features, such as the ideological leaning of voters, and the level of political polarization in the party system. Thus, the measurement error entailed by standard measures should also be taken as a non-random error.

5.7.3 Validating country-level DIF distortions

So far I have produced evidence showing that the Bayesian Aldrich-McKelvey scores, estimated separately for each election, on average produces party positions that are closer to the expert placements. This is so because the 2S-BAM scaling is correcting for individual-level DIF which implies a source of incomparability across individuals. Once the party ideal points and the voters' distortion parameters are simultaneously estimated we achieve within-country comparable positions. Yet, as we have seen, a similar problem also undermines between-country comparability. This justified the introduction of the second stage of the model. In it, I exert leverage on an objective feature: the membership of national political parties in the European Parliament's political groups, and on an assumption of internal homogeneity of EP groups, to simultaneously estimate country-specific distortion parameters and the ideal points of the European Parliament political groups.

Therefore, we need to provide supportive evidence for this second-stage of the procedure, where the within-country comparable ideal points are transformed into fully comparable latent positions, and mapped on the retrieved European Common Space. The estimates produced in the second-stage of the model consist of two types of simultaneously estimated parameters:⁵² the country-level distortions and EP groups' ideal points. The latter type of parameters can be less ambiguously validated than the former one. Moreover, the number of political groups in the EP is relatively small and an assessment of the meaningfulness of these estimates can be directly performed at face validity (refer to Tables 5.3 and 5.4). At the best of my knowledge, I am not aware of any quantitative evaluation of the policy positions in terms of the left-right and EU integration dimensions for the EP groups.

The estimates of the ideal points of EP groups were presented in Tables 5.3 and 5.4. In all cases, left-wing groups (socialist, left, greens, and Non-Inscrits with a left-wing profile) have a negative left-right ideology score. Inversely, all the remaining groups display a positive score. The two most left-wing groups both in 2009 and in 2014 are the group of the European United Left, and the group of Non-Inscrit parties of the left. On the right front, the two most

⁵² I intentionally stress the simultaneity of the estimation process since any estimation problem on one type of parameters (e.g. country-level distortions) would automatically affect the other types of parameters (e.g. EP groups' ideal points). Thus, the reader should consider the validation of one type of parameters as both a direct test of validity of the estimates explicitly being tested, but at the same time also as an indirect test of the estimates not explicitly scrutinized.

right-right parties are the Europe of Freedom and Democracy and the group of Non-Inscrit parties in 2009, and the newly formed group of Europe of Nations and Freedom, and the Europe of Freedom and Direct Democracy in 2014. The moderate group of European Liberals lies in the centre of the ideology continuum both in 2009 and in 2014.

With respect to the EU integration dimension, we find a confirmation of the classic 'bipolar Eurosceptic' configuration. The most pro-European EP group appears to be the EPP, closely followed by the Liberals and the Socialists both in 2009 and in 2014. As for the Eurosceptic front, an interesting pattern is that while in 2009 the voters were perceiving the far right groups approximately as Eurosceptic as the left-wing groups — with the group of the United Left and of the Non-Inscrit parties of the left closely following the EFD and the Non-Inscrits of the right —, in 2014 voters appear to perceive the far-right groups of the ENF and of the Non-Inscrits as far more Eurosceptic than the far-left EP groups. The EU integration score for the ENF is -1.42 , followed by the Non-Inscrits (-1.44), and by the EFDD (-0.86). Left-wing groups are still perceived as Eurosceptic, although to a lesser extent: the United Left's score -0.33 , and the Non-Inscrits of the left -0.48 . Therefore, it appears that nationalists have almost conquered the monopoly of the Eurosceptic front. The impression is that, having seen these scores in 2015, the Greek surrender to the austerity policy packages demanded after the referendum of July 2015 would have been an easy guess: the threat of the left to Europe is probably far less credible than the threat from the right. To be more precise: Syriza scored (for 2014) $+0.21$ on the EU integration dimension. Comparing it with the $+1.38$ of New Democracy, and especially with the -1.50 of Golden Dawn, we are led to consider that opposing the austerity means opposition to just one aspect of what is implied by the European Union project, and this is clearly a more moderate position than the opposition to the existence of the Union in itself. Beyond these substantive remarks, the overall impression is that the ideal points of EP groups are reasonable, and this lends support to the whole second-stage of the Bayesian Aldrich-McKelvey model.

Additionally, I try to provide a test for the country-level DIF corrections through a comparison of the raw left-right averages, the first-stage ideal points (i.e. mapped on the single country-specific basic spaces with only the first stage of the 2S-BAM procedure), and the second-stage ideal points (mapped on the single European Common Space, the complete 2S-BAM procedure). I do this by using the only DIF-corrected expert survey existing to date:

the 2010 CHES in the version of (Bakker, Jolly, Polk and Poole 2014). This version of CHES is unique in that three fictitious non-existing parties were positioned by the experts in the form of vignette descriptions. In this way, the vignettes can be used as bridging information to apply the Aldrich-McKelvey model and retrieve the European Common Space and correct for differential-item functioning potentially producing cross-country incomparability in the experts' scores. I can only perform this test for the left-right dimension and for the 2009 elections (the vignettes were not repeated in the latest CHES studies).

Table 5.8 — Spearman correlation and RMSE with DIF-corrected CHES scores as benchmark

	Left-right ideology, 2009		
	Standard Average	First-stage ideal points	Second-stage ideal points
Spearman rank correlation	0.652	0.695	0.719
RMSE	0.838	0.780	0.749

Note: table entries are Spearman rank correlations and RMSE values measure with respect to the DIF-corrected CHES scores (Bakker, Jolly, Polk and Poole 2014). Standard average refers to the raw mean left-right placements, First-stage ideal points are BAM scores that correct for voters but not country-specific DIF distortions, Second-stage ideal points are the 2S-BAM scores correcting for both voters and country DIF.

Table 5.8 shows a monotonic increase in the Spearman correlation with the DIF-corrected CHES left-right party scores passing from the standard raw left-right average perception, to the first-stage party ideal points, and then to the second-stage party ideal points. At the same time, the RMSE also decreases monotonically. Both tests thus seem to lend additional validity to the party scores mapped on the European Common Space.

5.7.4 A predictive validity test of voters' and parties' ideal points with propensities to vote

The final test is probably the most crucial. Up to this point, we have evidence that shows that ideal point estimation can correct for latent individual-level and country-level distortions and that ideal points are closer to expert ratings than the standard measure routinely used by political behaviour researchers and that relies on voters' raw average perceptions. Yet, there are at least two threats to the validation scheme implemented so far. First, even though

political parties' ideal points appear to provide better estimates of party positions, and even though this indirectly suggests that estimates of voters' distortions were reasonable — given that the two sets of parameters were simultaneously estimated —, we did not *directly* test for the validity of these individual distortions (studied in Chapter 6). Second, we still do not know whether the ideal points are in fact worth being estimated in other political behaviour contexts (i.e. national elections, single country analyses).

Vote choice lies at the core of representative democracy and as such represents one of the most studied forms of behaviour in political science. Thus, the ultimate validity test for the ideal points is represented by their power to predict voting propensities. To the extent to which they can improve our understanding of voting decisions, they would be justified not only in the present theoretical framework, but more generally in any empirical investigation of voters' ideological and/or voting preferences.

I operationalize the validation test relying on the most established spatial voting proposition, which is proximity voting. Thus, I model voters' Propensities To Vote (PTVs) (De Angelis and Garzia 2013; van der Eijk, van der Brug, Kroh and Franklin 2006) as a function of ideological distance (i.e. absolute value of the difference) between the voters and the parties. PTVs are the standard dependent variable in spatial voting research (Lachat 2008; Vegetti 2014) and can be seen as a quasi-interval measure of voting preference. The highest PTV is normally correlated > 0.9 with the classic vote choice variable, but PTVs have the advantage of reducing the amount of missing values in the responses. Each voter is asked to rate all the main political parties in the country with the following question wording:

“How probable is it that you will ever vote for the following parties? Please answer on a scale where '0' means 'not at all probable' and '10' means 'very probable'.”

The main expectation is that increasing ideological distance is associated with smaller voting propensities. The ideal points would be validated if the ideological distance produced utilizing the ideal points will appear to be a stronger predictor of the vote than the ideological distance produced using the standard left-right measures.

Thus, the regression model to estimate is the following:

$$PTV_{ip} = \beta_0 + \beta X_i + |lr_i - lr_{ip}| + |y_i^* - y_p^*| + \mu_{kt} + \varepsilon_i ;$$

where: PTV_{ip} is the propensity to vote for party p expressed by voter i ; lr_i indicates voters' self-reported left-right position; lr_{ip} is the left-right position of party p as perceived by voter i ; y_i^* is the voter i ideal point; y_p^* is the ideal point of party p . Since the second-stage transformation involving the country-level distortions would be applied to both voters and parties, the model using the first-stage and the second-stage measures would be numerically identical. βX_i represents a set of standard individual predictors of voting preferences, including: age, gender, years spent in full-time education, interest in politics, subjective social class, urban/rural residence, union membership, religious denomination, frequency of church attendance, support for the government, and income level. Finally, I control for potential unobserved heterogeneity adding a random intercept at the election level (so k indexes the country and t the election, although the indices are not shown in the other covariates not to overload the notation in the regression equation); ε_i indicates a random error term.⁵³

The 'standard' regression model is not taken as a 'correct' predictive benchmark. In fact, I believe that the practice of measuring ideological distance through perceived party positions is flawed on an ontological and epistemological basis, as multiple party positions are considered for the same party. A better alternative would be to use the raw average party placement. In this way, at least a single position would be introduced for each party. However, I prefer the 'flawed' specification because it represents a hard case: simple party perceptions are endogenous in that voters project their position onto the position of the party they feel closer to, or intend to vote for. This, in turn, is likely to artificially inflate the predictive capacity of the model. In preliminary tests I observe that ideological distances with voter-specific perceived party positions display smaller goodness of fit than a model using raw average party positions. In conclusion, evidence coming from this predictive test should be seen as a particularly strong case as it is designed to this end.

A classic difficulty working with PTVs arises when the researcher is willing to run a single regression to explain all the PTVs for various parties across countries. This requires a contemporaneous downward switch in the measurement level (from the individual to the individual \times party level, and an upward switch in the conceptual level (from the 'specific'

⁵³ I estimate a linear hierarchical model using the lmer function from the lmer4 R package.

party to the 'generic' party; see De Angelis and Garzia 2013). This is achieved through a procedure of *stacking* of the data matrix, in which the data is converted from wide to long data format, generating a dataset at the individual \times party level (with $N \times P$ observations). This data structure is analogous to the one considered in a multinomial conditional logit with non-binary data. When predictors change across voters and parties, such as for the ideological distance terms, a standard regression works well. When predictors are constant across parties, such as for respondent's age or assessment of the state of the economy, a practice that has been suggested is to compute linear transformations of voters' features on the $i \times p$ level. These predicted scores are labelled *y-hats* (van der Eijk, van der Brug, Kroh and Franklin 2006).

My choice is to avoid completely this sort of complications and, indirectly, to also avoid relying on ungrounded statistical manipulations. In fact, I prefer to avoid the stacking process completely, estimating four different regression models, one for each of the four main European party families. This approach has the advantage of being more informative, in that it tells us where (i.e. for which party family) the improvements of the ideal points estimation are more sizeable.

In particular, I estimate: 1) a model on a subset of the data that only includes centre-left national parties, namely those that are members of the EP group of the European Socialists and Democrats; 2) a model that includes only centre-right parties belonging to the group of the European People's Party; 3) a model for left-wing parties (members of the European United Left and the Non-Inscrit parties of the left); and finally, 4) a model for far-right parties (Non-Inscrit parties, members of the Europe of Nations and Freedom, and of Europe of Freedom and Democracy).

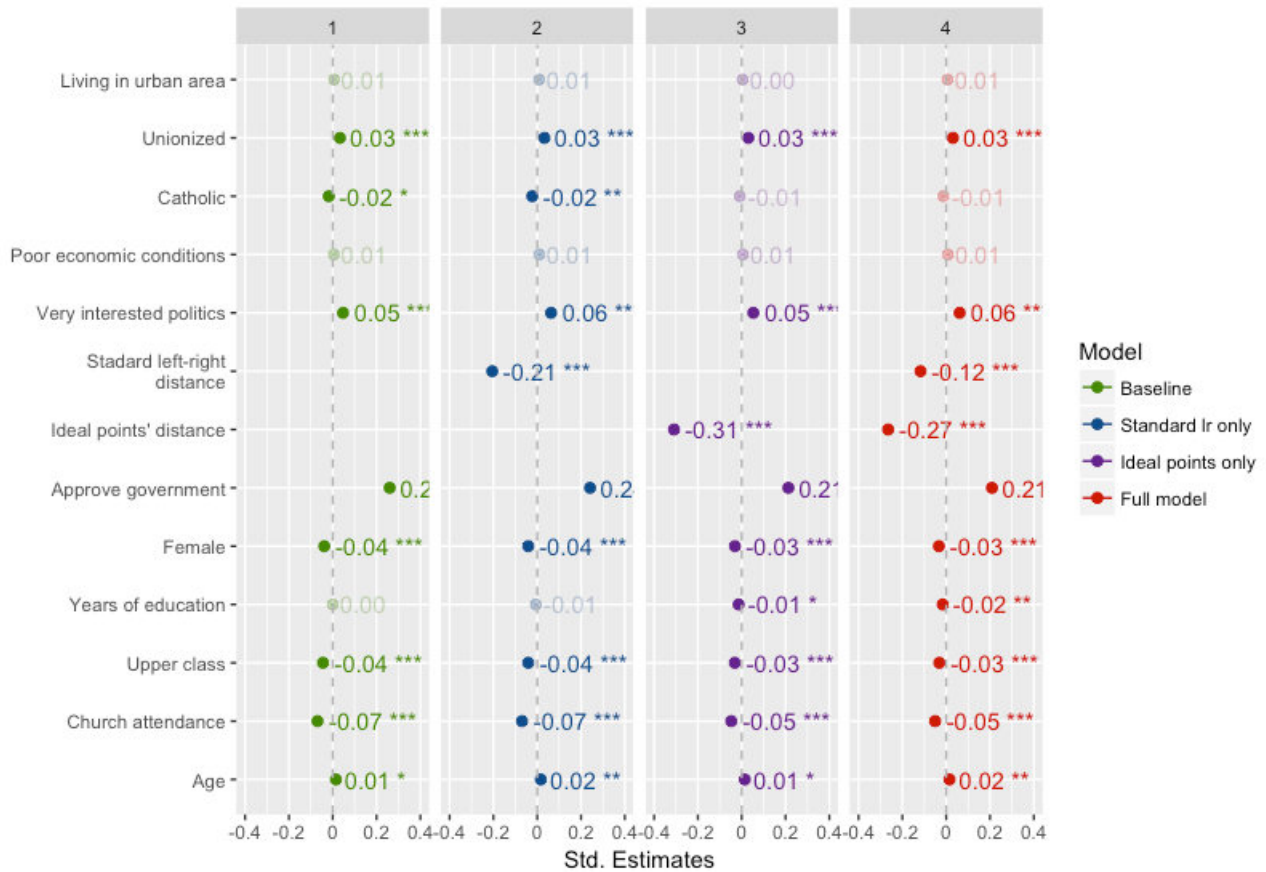
In all cases where more than one party in a certain country belongs to the group being examined, I select the largest of these parties, namely the party that won the largest share of votes in that EP election. I report the results in the form of regression coefficients' plots (see Appendix C for detailed tables).

Predicting voting preferences for centre-left parties

I start by considering centre-left parties members of the European Socialist group. Figure 5.16 presents four different models: 1) a model with all the basic controls and no ideological

distance predictor; 2) the basic model with the standard left-right distance term added; 3) the basic model with the ideal points' distance term added; and 4) a full model with basic controls and both the standard and the ideal points' distance covariates.

Figure 5.16 — Coefficient plots for centre-left vote preferences' predictors



Note: the coefficient plot represents the estimates from a linear hierarchical model with random intercepts at the election level. Dependent variable is the propensity to vote for the party belonging to the Party of European Socialists in each country. When two parties are found the largest is considered. The full table is presented in Appendix C (Table C.1). Both standard left-right distance and the ideal points' distance are standardized to allow for a direct comparison. The first model includes only baseline controls; Model 2 adds the standard left-right distance to the baseline model; Model 3 adds the ideal points' distance to the baseline model; Model 4 adds both the standard left-right distance and the distance in the ideal points.

Table C.1 in Appendix C reports all the raw and standardized coefficients and the fit statistics for the interested reader. The results are striking, as the ideal points appear to substantially improve our ability to predict voting preferences for centre-left European parties. This is not

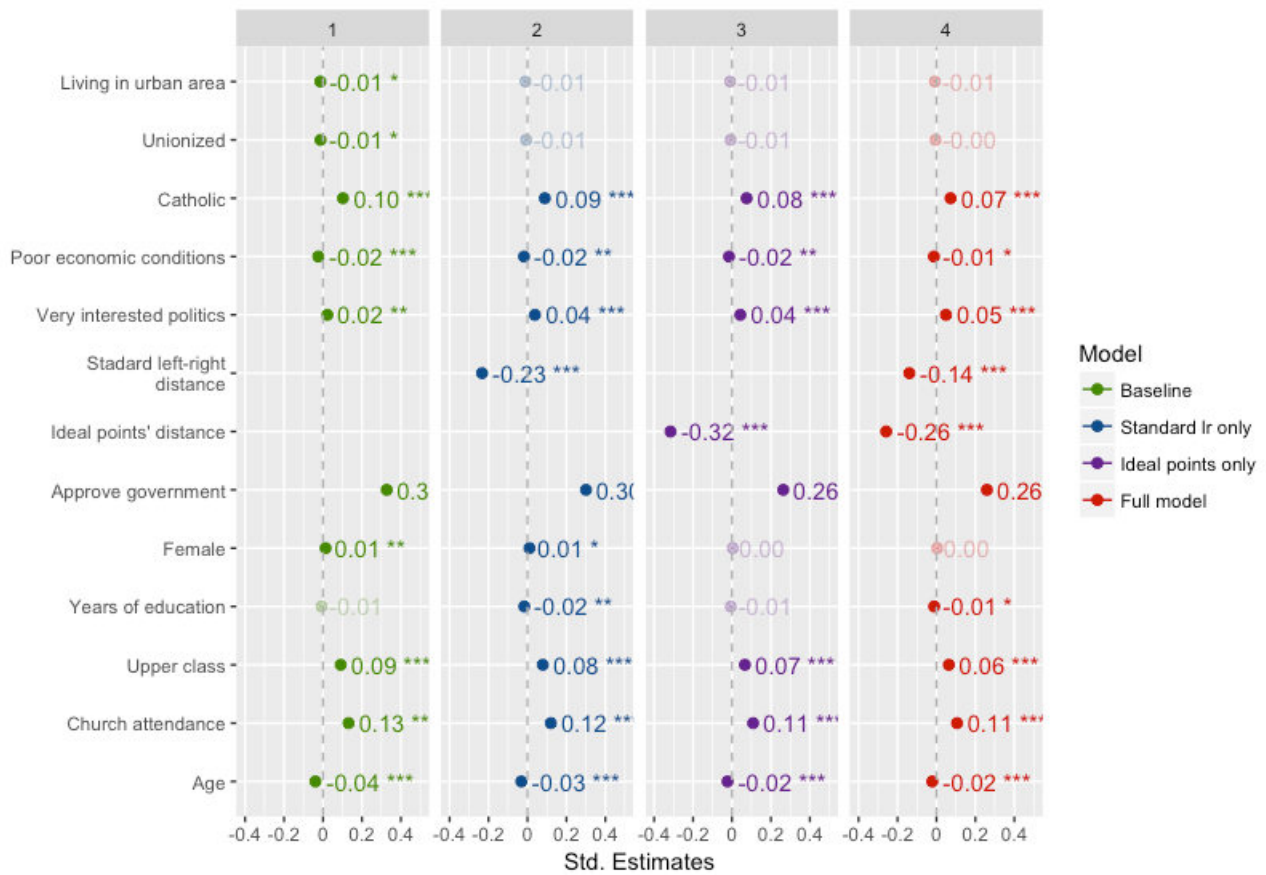
an occasional change as was the case for previous validity tests. Passing from the basic model with controls (model 1) to the model with the standard proximity voting predictor (model 2), I observe reduction in the Akaike Information Criterion (AIC) from 179,493 to 177,813. Left-right distance is a well-established vote predictor, and in fact it is the stronger predictor in the regression, with a standardized coefficient of -0.21 , statistically significant at the $p < .001$ level. If we remove this standard term from the regression, and add the ideal points' distances instead, the AIC score shrinks strikingly to 176,035, which is an additional reduction of about the size of the one previously observed. In fact, the standardized regression coefficient for the distance in the voters' and party ideal points is -0.31 , significant at the $p < .001$ level, thus almost 1.5 times larger than the standard ideological distance predictor. This suggests that not only may we have persistently underestimated voters' ability to locate ideologically parties, but also the importance of ideological proximity for voting decisions. As a final test, I run model (4) that includes both the standard and the ideal points' version of the ideological distance variable: the ideal points' distance still dominates over the standard distance variable. The standardized coefficient of raw left-right distance shrinks to -0.12 , while the standardized coefficient for the ideal points' distances is now -0.27 , more than doubling the magnitude of the standard variable.

This first piece of evidence points to an unexpectedly large improvement both in model fit and in the magnitude of the ideological predictor if the ideal points are preferred in modelling voting preferences. The next subsections rule out the possibility that this evidence for centre-left parties represents an isolated case.

Predicting voting preferences for centre-right parties

In this subsection I again estimate the same predictive-validity models, but this time I only consider the propensity to vote for centre-right parties (i.e. those that are members of the European People's Party). Again, if in a country there are two (or more) national parties that are members of the EPP, then I pick the largest one. Once again, I only present the coefficients' plot (Figure 5.17), while the interested reader can find all the coefficients in Table C.2.

Figure 5.17 — Coefficient plots for centre-right vote preferences' predictors

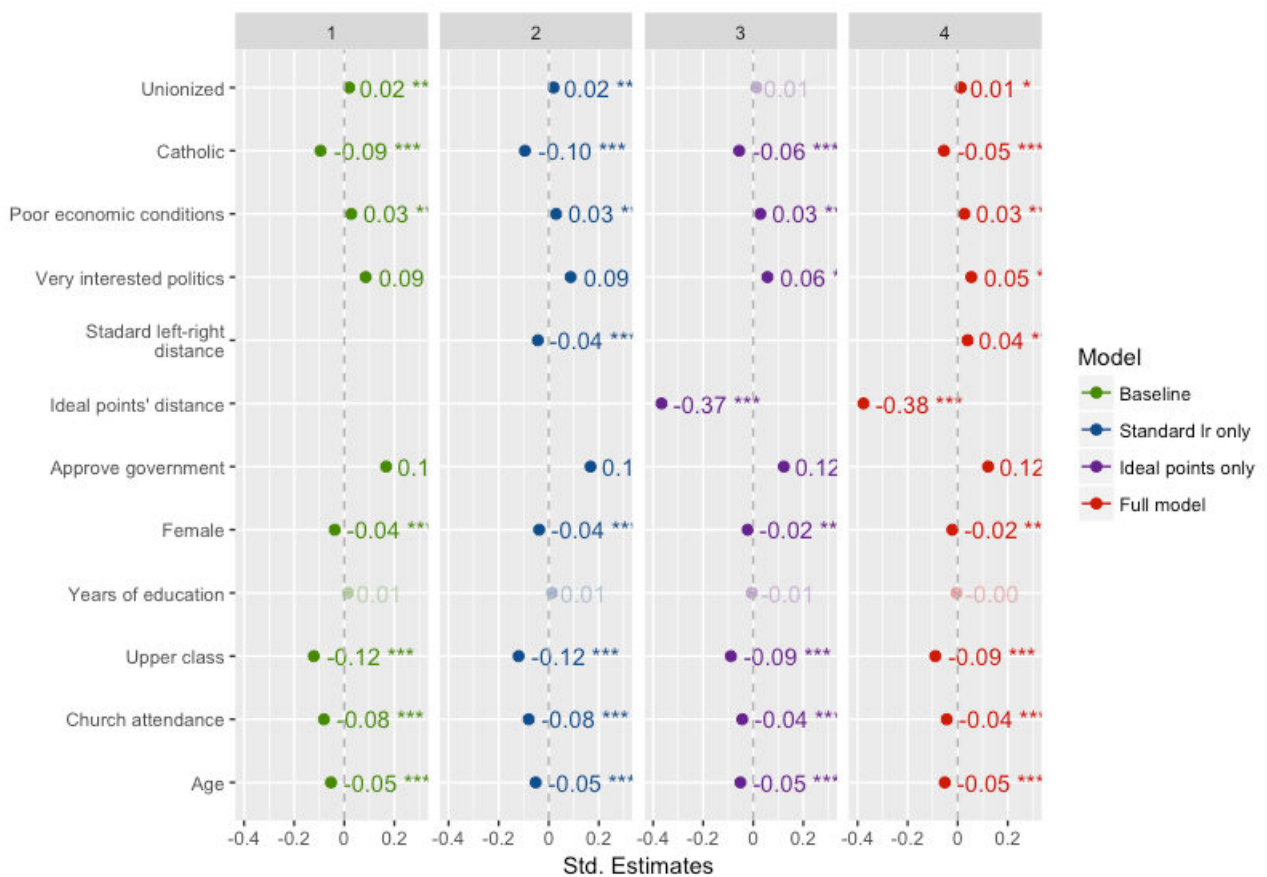


Note: the coefficient plot represents the estimates from a linear hierarchical model with random intercepts at the election level. Dependent variable is the propensity to vote for the party belonging to the European People's Party in each country. When two parties are found the largest is considered. The full table is presented in Appendix C (Table C.2). Both standard left-right distance and the ideal points' distance are standardized to allow for a direct comparison. The first model includes only baseline controls; Model 2 adds the standard left-right distance to the baseline model; Model 3 adds the ideal points' distance to the baseline model; Model 4 adds both the standard left-right distance and the distance in the ideal points.

It is clear that the previous pattern was not isolated. Once again, passing from model (2), with the standard ideological distance term, to model (3), distance computed with the ideal points, the value of the AIC score decreases about half it had decreases passing from the model (1), with only basic controls, to the model with the standard left-right distances (from 176,263 of model 2 to 174,722 of model 3, while the AIC for the basic model 1 is 179,596). As in the previous case, also for centre-right parties the standard left-right distance coefficient is both substantially and statistically significant. But once again, the coefficient for the ideal points'

distance is about 1.5 times larger (standardized coefficients are -0.23 for the standard ideological distance term, and -0.32 for the distance in the ideal points). Finally, the fourth model also reveals that if both predictors are included, the ideal points' version still dominates (standardized coefficients are -0.14 and -0.26). Yet, could these improvements be limited to mainstream and ideologically moderate parties?

Figure 5.18 — Coefficient plots for far-left vote preferences' predictors



Note: the coefficient plot represents the estimates from a linear hierarchical model with random intercepts at the election level. Dependent variable is the propensity to vote for the party belonging to Group of the European Left in each country. The full table is presented in Appendix C (Table C.3). Both standard left-right distance and the ideal points' distance are standardized to allow for a direct comparison. The first model includes only baseline controls; Model 2 adds the standard left-right distance to the baseline model; Model 3 adds the ideal points' distance to the baseline model; Model 4 adds both the standard left-right distance and the distance in the ideal points.

Predicting voting preferences for far-left parties

To understand whether or not ideal points also improve our ability to predict the vote for more radical political forces, I repeat the previous exercise for the political parties that are members of the group of the European United Left. In this case, in contrast to the socialist and popular parties, not every country has a national party of the left, so the number of observations shrinks to about half. In fact, out of the 54 elections, I can only count 28 cases. Figure 5.18 presents the coefficients' plot (for all coefficients see Table C.3).

The new evidence seems to suggest that the additional predictive capacity of the 2S-BAM measure is not limited to mainstream moderate parties. More importantly, it appears that proximity voting was substantially underestimated for left-wing radical parties: as shown by model 2, the predictive power of the standard ideological distance variable *seems* to be negligible. The coefficient is statistically significant but substantially insignificant in model (2). An erroneous conclusion from the table, would be that ideological proximity is a minor explanation of vote preferences. In fact, its standardized coefficient is only -0.04 . The effect of ideology would be smaller in magnitude than the government (dis)approval ($\beta = 0.17$ in the same model 2), union membership, secularism, social class, and even of reported interest in politics. The AIC score decreases by only about 50 points from the baseline value of 103,508, down to 103,465. Yet, this conclusion is unwarranted and — to again borrow the words of Aldrich and McKelvey — depends on the confusion around the methods rather than on the confusion of the voters. In fact, the effect of ideology is present, although latent in the data, and when we bring it out in model (3) ideological distance appears as the strongest determinant of left-wing parties' vote preference, with a standardized coefficient of -0.37 (significant at $p < 0.001$ level). In the final model specification, the standard ideological distance term is knocked-out: while all other coefficients remain stable, it turns significant in the wrong direction, while the ideal points' measure remains stably large (at $\beta = -0.38$, over three times the size of government approval).

These results are revealing on the role of ideology in shaping voters' decisions. For a long time our conclusions have been flawed by the systematic error implicated in the adoption of empirical measures that were not in line with the theoretical framework of spatial voting. All this supportive evidence makes the conclusion that voters are unable to activate issue voting

far less solid, as probably more voters fit into the category of 'ideologues' than we previously thought, if only we are able to understand their perception of the political world.

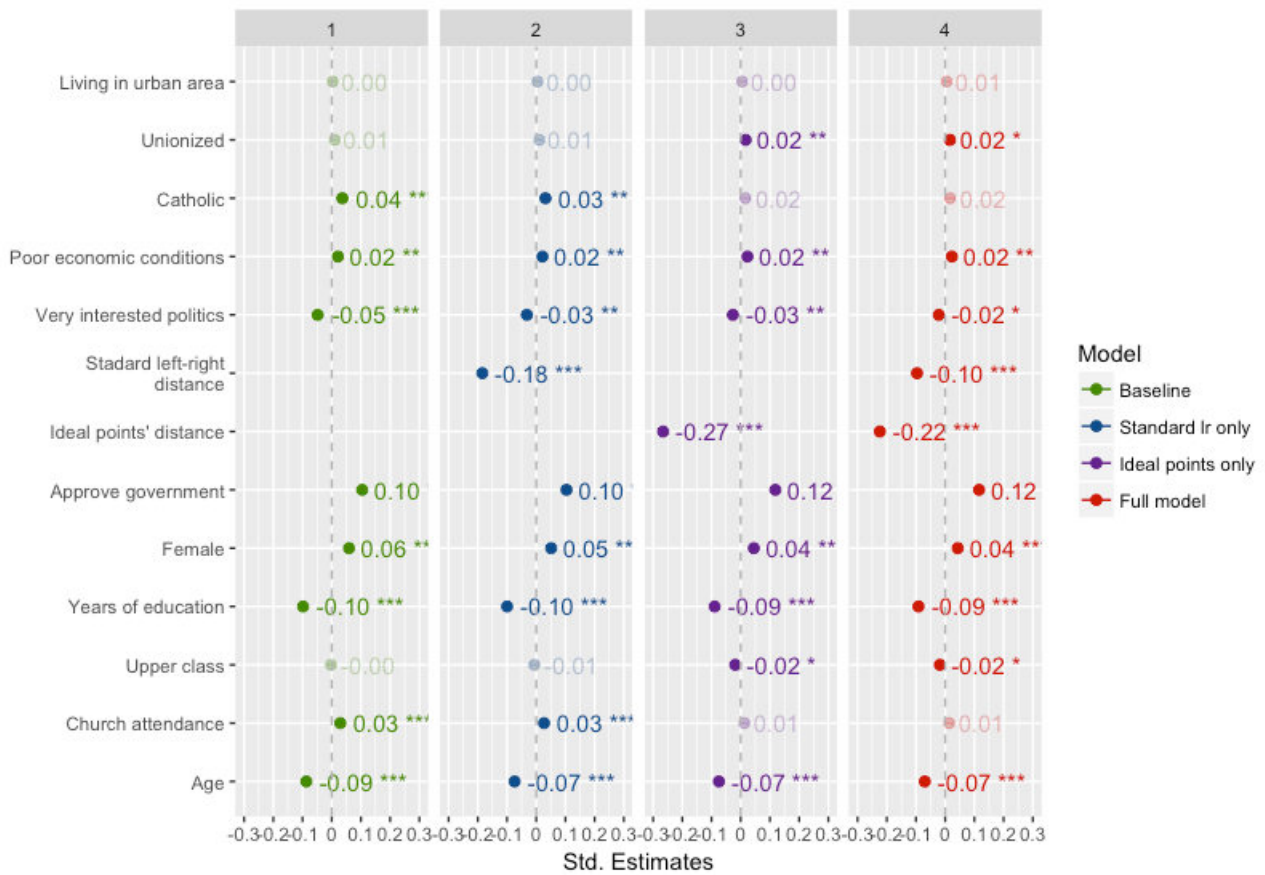
One potential explanation for the larger improvement for the radical left party preferences may lie in a latent moderation bias, preventing more extreme voters to declare that they are in fact ideologically extreme. This is exactly the core of the discussion in sections 2.3, 2.5 and 3.6. The 2S-BAM procedure is thus allowing us to correct for this source of subjectivity and pulls extreme-left voters back to their correct locations. The next, and final, subsection explores the case of voting propensities for far-right parties.

Predicting voting preferences for far-right parties

We repeat the estimation for the last time to model voting propensities for radical-right parties. As we can see in Figure 5.19, the ideal points' improvement is not as sizeable as in the case of the far-left. However, once again, the findings point at ideal points' distance as improving the ability to predict the vote, as compared to the standard left-right distance. Yet at the same time, the pattern of improvement resembles more the one observed for mainstream parties than the one for far-left parties.

Standardized coefficients in Table C.4 show that that the effect of left-right distance is already quite substantial, with a $\beta = -0.18$, the larger in the regression and followed by the (negative effect) of the years of education. Distance in the ideal points in turn has a standardized coefficient of -0.27 . Once again, the AIC score decreases more when we include the ideal points' measure than when we include the standard left-right distance. When both covariates are included, the ideal points' distance is still more than doubling the standard coefficient in size (-0.22 , vs. -0.10). This is once again a sizeable improvement of the performance of the model, although not in the astonishing magnitude that has been observed for the case of radical left parties. I can only speculate about the existence of an asymmetrical DIF distortion that leads left-wing voters to moderate their ideological position more than far-right voters.

Figure 5.19 — Coefficient plots for far-right vote preferences' predictors



Note: the coefficient plot represents the estimates from a linear hierarchical model with random intercepts at the election level. The dependent variable is the propensity to vote for the party belonging to far-right parties (European Freedom and Democracy, Europe of Freedom and Nation or far-right non-inscrits). The full table is presented in Appendix C (Table C.4). Both standard left-right distance and the ideal points' distance are standardized to allow for a direct comparison. The first model includes only baseline controls; Model 2 adds the standard left-right distance to the baseline model; Model 3 adds the ideal points' distance to the baseline model; Model 4 adds both the standard left-right distance and the distance in the ideal points.

5.8 Concluding remarks

In this chapter I have shown how we can estimate latent scores of policy positions that produce comparable indices for voters and parties' positions from all European countries on two political dimensions (left-right ideology and the EU integration dimension). Then, I acquaint the reader with the idea of working with latent variables, revealing the functioning of the estimation process in greater detail, providing illustrative cases, and reporting descriptive statistics. The latter task can only be limited and illustrative given the

considerable amount of new data that the two-stage Bayesian Aldrich-McKelvey model has produced, including two distortion parameters for each voter and for each of the two dimensions (and related uncertainty measures), voters' ideal points on both dimensions (obtained via linear transformations), party ideal points, country-distortion parameters, and EP political groups' ideal points.

Finally, I have attempted to validate such a large set of latent indicators. Using a well-established expert survey, I show that: 1) party ideal points are slightly closer to the party ranking produced with the expert scores than standard left-right averages; 2) party ideal points are closer to the left-right and EU integration CHES scores than standard average placements; 3) the second-stage of the model also produces face-valid latent scores of the political groups in the European Parliament, and produces an improvement in the correlations with the only existing expert survey that corrects for country-level DIF distortions; and finally, 4) I show that voters and parties' ideal points produce superior results in terms of ability to predict voting preferences. In particular, the ideal points' based measure of ideological distance strikingly reduces the AIC score, meaning that ideal points describe voting preferences better. The improvement in the AIC score passing from a model with the standard self-placement and the perceived party placement difference, to a model considering the difference between voters and parties' ideal points we do not only always reduce the AIC, but we produce an AIC reduction comparable, if not greater than, the AIC reduction from a baseline model to the model with the standard measure of ideological distance.

The impression is that the supporting evidence produced by the validation task in this chapter is sufficiently solid to create the suspicion that ideological explanations of the vote may have been substantially underappreciated due to our inability to model ideology for what it is, a latent concept, and therefore to correct the systematic measurement error that flaws standard measures and stemming from differential-item functioning and moderation bias. In conclusion, Aldrich and McKelvey appear to have been right when they wrote that:

[...] at least part of the confusion which has been attributed to the voter may be attributable purely to methodological difficulties inherent in collecting this type of perceptual data. [...] Different voters may be anchoring the scales according to their own interpretation of these endpoints. (Aldrich and McKelvey 1977, 112)

Having finally produced appropriate measures to express the positions of voters and parties in the political space, we can finally begin to study some of the most pressing questions that arise from the previous discussion and evidence: why do voters produce distorted representations of the ideological space? Are these distortions systematic and thus to some extent predictable or do they occur at random? Once we have systematically assessed the determinants of these perceptual distortions, the next question would be: are we sure about previous measures based on ideological positions of parties, such as the polarization index? Finally, the most pressing question: are we interpreting European electoral competition correctly?

All these questions, that have been systematically spelt out in Chapter 2, and are addressed in the next chapter.

Chapter 6 — Discerning the Zeitgeist: empirical analyses and findings

In politics the most catastrophic force in the world is the power of irrelevance which transmutes one conflict into another and turns all existing alignments inside out.

Schattschneider, Elmer E. [1960] (1975, p. 72).
The Semisovereign People: A Realist's View of Democracy in America.

6.1 Introduction

Having estimated the two-stage Bayesian Aldrich-McKelvey model which enables us to separate the subjective perceptions of voters from the objective positions of parties, and having demonstrated the empirical validity of the new measure, we can finally move forward and subject the thirteen hypotheses developed in Chapter 2 to empirical testing.

First, however, it is worth recalling the meaning behind the latent variable approach. As applied researchers, we routinely use standardized surveys to produce comparable indicators. Yet, we often overlook the two-stage mechanism underlying survey responses (see section 2.2). In the first place, voters undertake a process of deliberative cognition that produces a mental (i.e. latent) representation of the items' position. In the second step, the respondent expresses this mental representation in terms of the scale primed by the interviewer. This scale is fundamentally undetermined, unless the voter is provided with two elements: 1) substantive equivalents of the endpoints of the scale; and 2) a distance metric to compare items' positions.⁵⁴ Without these two elements, the respondent will map the endpoints, and the actors' positions, in terms of a personal mental representation of the scale. These mental representations (or schemata, as explained in Chapter 2) could be affected by important drivers such as the group identity of the respondent (potentially generating

⁵⁴ Providing substantive representations for three points would also suffice.

ingroup favouritism and outgroup negativity mechanisms), and the respondents' ability to discriminate among political stimuli. Therefore, voters' positions on complex constructs are meaningful only once this aspect is taken into account. This source of measurement bias, known as Differential-Item Functioning, inflates our political scales tapping complex concepts such as ideology. This process leads to the basic problem of incomparability described in previous chapters. Unless we are able to amend this incomparability, we are bound to include not only one, but two constructs in our measures: the political positions that we initially intended to measure, and the bias stemming from the absence of a shared political space among respondents. Of course, latter aspect is also of interest. In fact, to the best of my knowledge, there has not been a comparative assessment of individual perceptual distortions yet. Therefore, the first half of this chapter deals with providing a systematic explanation of such individual distortions. We must be able to assess them empirically, in order to detect and to winnow the two different concepts, and therefore to amend our measures of ideological positions. For this reason, it becomes particularly important to understand the determinants of scale distortions. We must be aware of the underlying sources of measurement error that confounds our empirical indicators.

Hypotheses H1–H8 in Chapter 2 were developed to increase our knowledge of the sources of these individual distortions in reported political positions and this will be the focus of the first part of the chapter (sections 6.3 and 6.4). Next, we explore whether individual biases also blur our aggregate-level measures (section 6.5): the focus shifts on a well-established measure of political polarization, the Dalton (2008) index. Hypothesis H9 proposes that standard indices of polarization will be biased by individual perceptual distortions. The basic intuition here is that the standard Dalton index, when it is built with standard raw average placements of party positions, cannot separate the true polarization linked to objective party positions from the systematic measurement error produced by the subjectivity of political perceptions. As tested in hypothesis H10, a valid measure of polarization should not be correlated with individual distortions. I show that this can be achieved by constructing the Dalton index with the ideal points instead of the standard left-right average placements that performed poorly in Chapter 5.

Having found evidence supporting the ideal points' version of the Dalton index, which proves to be independent from individual distortions, in section 6.6 I adopt it to study one of the

most pressing contemporary questions in political behaviour: how is electoral competition structured in the European party systems after the outbreak of the Great Recession? Is it structured — as per hypothesis H12 — along the lines of the classic class cleavage (see section 2.4.1), thus between a block of parties of the left and a block of non-left parties, with larger left-right polarization in the party systems decreasing voters' availability to switch the vote between political blocks? Or is electoral competition centred — as per hypothesis H13 — around a new integration/demarcation cleavage that sets a block of mainstream parties against a block of anti-establishment parties, and where it is the polarization on this second EU-integration dimension that actually constrains voters' electoral availability?

Before proceeding with the empirical analysis, the next section presents the main operationalization choices.

6.2 Empirical hypotheses and operationalization of the main variables

The theoretical chapter has produced thirteen empirically falsifiable hypotheses that require appropriate operationalization for all the variables involved. Table 6.1 presents an overview of the empirical hypotheses, integrated by the specification of the dependent variable, of key independent variables, and by the expected direction and shape of the relationships. A thorough explanation of the underlying theoretical hypotheses is given in sections 2.3, 2.4 and 2.5.

I distinguish four groups of hypotheses on the basis of the different dependent variable.

First, hypotheses H1–H4 investigate the latent lateral shift of voters' perceptions (a_i). Second, hypotheses H5–H8 involve the study of latent stretch distortions of voters' perceptions (b_i). In studying voters' perceptual distortions, I limit the focus on the left-right dimension, partly as a result of the EES 2014 accident (see section 5.1.2) and consequent delay and imperfections of the available data. The systematic investigation of latent distortions on the second dimension remains a task for future research. Yet, understanding voters' latent misplacements on the first dimension can also help to develop hypotheses explaining distortions on the second dimension. In particular, the same mechanisms of ingroup favouritism and outgroup negativity are likely to operate for the perceptions of party positions in terms of EU integration.

Table 6.1 — Summary table of empirical hypotheses

Group	Hypothesis	Dependent variable	Independent variables	Expected Relationship
Latent shift distortion (left-right) Section 6.3	H1	Latent shift (a_i)	Ideology	Linear (-)
	H2	Latent shift (a_i)	Ideology	Quadratic (-)
	H3	Latent shift (a_i)	Ideology \times Interest in politics	Interaction (+)
	H4	Latent shift (a_i)	Ideology \times Partisanship	Interaction (+)
Latent stretch distortion (left-right) Section 6.4	H5	Latent stretch (b_i)	Factual political knowledge	Linear (+)
	H6	Latent stretch (b_i)	Factual political knowledge \times ideology	Interaction (-)
	H7a	Latent stretch (b_i)	Ideological extremism	Linear (-)
	H7b	Latent stretch (b_i)	Ideological extremism	Linear (+)
Bias in polarization measure Section 6.5	H9 (test LR)	Latent stretch left-right ($b_{i,LR}$)	$PI_{Dalton,LR}$	Linear (+)
	H10 (test LR)	Latent stretch left-right ($b_{i,LR}$)	$PI_{Ideal,LR}$	No relationship
	H9 (test EU)	Latent stretch EU* ($b_{i,EU}$)	$PI_{Dalton,EU}$	Linear (+)
	H10 (test EU)	Latent stretch EU* ($b_{i,EU}$)	$PI_{Ideal,EU}$	No relationship
Structure of electoral competition Section 6.6	H11	Electoral availability	Any polarization index	Negative relationship for Downsian competition
	H12a (standard polarization index)	$ElectAvail_{i,LR}$	$PI_{Dalton,LR}$	Agnostic **
	H12b (polarization with ideal points)	$ElectAvail_{i,LR}$	$PI_{Ideal,LR}$	No relationship

H13a (standard polarization index)	$ElectAvail_{i,MC}$	$PI_{Dalton,EU}$	Agnostic**
H13b (polarization with ideal points)	$ElectAvail_{i,MC}$	$PI_{Ideal,EU}$	Linear (-)

* Due to a material error in EES 2014 in the wording of the question on attitudes towards the EU (see section 5.1.2), for the EU dimension this hypothesis is tested with reference to the 2009 EP elections.

** Agnosticism with respect to these relationships arises from presence of systematic measurement error (see H9–H10). Absent measurement error the expectation in H12a and H13a would be in line with the ideal-point based Dalton indices, H12b and H13b.

Thus, hypotheses H1 and H2 in particular, can easily be expressed in terms of the expectation that pro-European voters will probably misperceive political parties as being more Eurosceptic than they actually are and vice versa. In any event, the reader should understand that limited comparability is also a result of the EES 2014 accident (see section 5.1.2) and consequent delay and imperfections of the available data.

Third, in hypotheses H9 and H10 I examine the relationship between individual distortions and aggregate polarization. The focus is on the stretch distortion parameter (b_i). This is probably more convenient than the inspection of the relationship with the latent shift parameter (a_i), although the theoretical hypotheses could also produce empirical specifications considering the latter construct.⁵⁵ My preference is, however, to privilege latent stretch distortions due to their bidirectional biasing potential: we may not detect polarization (both for right-wing and left-wing parties) if enough voters in a country have smaller values for the b_i parameter or, alternatively, we may overestimate polarization if a large share of voters in a country have larger b_i scores.

Indeed, one important caveat of the empirical test for hypotheses H9 and H10 involves the direction of the relationship: the point here is not that polarization may *cause* larger scale

⁵⁵ One advantage of using latent shift distortion would be that this allows for asymmetric distortions. For instance, we could detect in which countries polarization is inflated or decreased due to aggregate latent shifts to the left (or to the right). The drawback in this case is that, since political polarization is a systemic property and does not specify a directionality *per se*, we should first subset the polarization into ‘left-wing polarization’ and ‘right-wing polarization’. That is to say, if the parties, for example, of the left are further apart from the centre than right-wing parties, then we may expect this to be associated with larger individual latent shift distortions and vice versa. Alternatively, we could also simply compute the absolute value of latent lateral shifts and study these absolute scores.

distortions. In fact, the reverse direction is the most reasonable relationship: *due to the fact* that in some countries more voters are better able to discriminate among party positions, the polarization index can be spuriously inflated (or vice versa). This is exactly the intuition underlying hypotheses H9 and H10: a large positive effect of polarization on individual stretch distortions may actually signal the opposite relationship.⁵⁶ The focus is on the fact that the ability of voters to discriminate among political parties is a conceptual construct which is empirically distinct from the level of polarization in the country. To the extent to which we are unable to separate the two, we are more likely to encounter measurement problems.

Finally, hypotheses H11–H13 test the theoretical model presented in sections 2.4.1 and 2.4.2. Hypothesis H11 is not tested directly, because its falsification arises from the patterns of evidence resulting from hypotheses H12 and H13, where the former proposes that the left-right dimension shapes electoral competition, and the latter presumes that EU integration structures electoral competition instead. I stress that these two hypotheses are theoretically, but not empirically, mutually alternative: I have no reason, *ex ante*, to exclude that both hypotheses will not be falsified. This would correspond to the case where negative significant relationships are found in both cases. If this is the case, hypothetically, we can draw some conclusions from the size of the coefficients of polarization on the two dimensions. Yet, as we shall see, this does not occur.

Alternatively, no relationship could be found in either case, and then H11 would be falsified. I anticipate that also this second possibility will not occur in practice, but the hypothetical conclusions in such a case should fall in three possible scenarios. First, we are unable to detect the relevant dimension that structures electoral competition. Second, voters are not sufficiently open to electoral competition. Third, voters do not possess enough information about parties' political stance. The first scenario is unlikely to be the case in the light of the ubiquitous finding of the importance of the left-right dimension, of the current politicization of the European Union, and also of the absence of other potential Europe-wide political

⁵⁶ The opposite relationship, meaning that larger polarization would increase the individual b_i scores, could work only insofar as a subgroup of the electorate, and not the whole electorate, perceives larger polarization. If polarization increases, and the whole electorate perceives it, then the 2S-BAM procedure would (correctly) reflect that in the party ideal points rather than on the b_i distortions.

dimensions. The second and the third scenarios would be compatible with a non-responsive (i.e. non-Downsian) Schumpeterian type of electoral democracy. The second scenario is thoroughly discussed in Bartolini (2002). In this case, voters do understand where parties' stand. However, they are so politically encapsulated that there is no real competition because most of the electorate is anchored. In this context, party identification is expected to be extremely widespread, strong, and stable. The third scenario would correspond to competition as pure leadership selection, completely detached from policy stance. In this case, and differently from the second one, voters are actually even unable to perceive substantial policy differences in the political offer. This scenario echoes the view of voters as 'cognitive misers' and widespread heuristic reasoning.

Finally, if a negative relationship — signalling that party system polarization is actively constraining voters' availability to switch between electoral blocks — is found on one *and not* on the other dimension, both H11 and one between H12 and H13 would not be falsified. This would suggest that one dimension in particular is structuring electoral competition in contemporary Europe. This is in fact the finding that will arise in later sections. I anticipate that the choice of the measure will prove to be critical: while the Dalton index based on standard average left-right/EU positions suggests that left-right ideology shapes European electoral competition, the ideal points' version of the Dalton index shows that EU integration dominates contemporary electoral competition. I postpone further considerations on these findings to Chapter 7.

6.2.1 Data and modelling strategy

The individual data merges the 2009 and 2014 European Elections Studies (see section 5.1.1). Overall, this sums up to 56,055 observations from 27 countries and 54 elections. In every model specification I therefore rely on hierarchical modelling. Multilevel/hierarchical models allow researchers to avoid two pitfalls in comparative analyses: on the one hand, they avoid ignoring variation between countries that would not be captured with complete pooling design; on the other hand, they avoid overstating country-level variation which would occur if we analyse each country separately. Moreover, in the latter case it would not be possible to estimate the effect of aggregate-level predictors such as the polarization

indices. Multilevel modelling represents the middle-ground, and has been shown to achieve superior results producing estimates that leverage on partial-pooling (Gelman and Hill 2007, p. 258).

In the present context, I include a random intercept at the election level, which allows us to control for unexplained heterogeneity across countries and between election years. Moreover, in the final tests of hypotheses H12 and H13 the multilevel models incorporate two aggregate-level predictors. In a context of relatively small aggregate sample size (54 elections at most in our case) the asymptotic justifications of frequentist estimation strategies might become weaker and maximum likelihood estimates severely biased, especially with non-linear models (Stegmueller 2013). For this reason, in these more complex model specifications (i.e. to test hypotheses H12 and H13, requiring a non-linear specification due to the binary dependent variable) I resort to a fully Bayesian set up. Additional details are provided in the following sections.

A final note: hierarchical modelling and interaction terms normally results in large regression tables. Whilst being fully aware of the advice of those in the methodologists' community arguing for parsimony (Achen 2002), stratifying voters in such a large comparative setting would involve hundreds of regression models.⁵⁷ Thus, I side with those who are more concerned about under-controlling rather than over-controlling: "A potential drawback to multilevel modelling is the additional complexity of coefficients varying by group. We do not mind this complexity—in fact we embrace it in its realism." (Gelman and Hill 2007, p. 246).

6.2.2 Presentation of empirical results

The community of statisticians is divided over the best way to convey and present the information contained in empirical models (Kastellec and Leoni 2007). Some believe that visual inspection constitutes the most effective way to communicate research findings, whilst

⁵⁷ Achen's ART (A Rule of Three) was defined following the argument that: "A statistical specification with more than three explanatory variables is meaningless" (Achen 2002, 446). This is not to say, as some erroneously understood it, that three predictors can generally provide enough control, but that one should narrow down the sample through stratification up to the point in which three controls would suffice. In fact, Achen's point does not involve excessive control, but the high levels of causal heterogeneity: "some groups of observations should typically be discarded to create a meaningful sample with a unified causal structure" (Achen 2002, 446). In a large comparative setting such an enterprise would be prohibitive. Then, accepted that we have to deal with heterogeneity, the consequence becomes to increase the number of controls, even if this implies dealing with far more than three covariates.

others prefer the greater detail offered by coefficient tables. My preference is for the former perspective, and thus in the remainder of the chapter I will only report coefficients plots. Even though I will refer the main coefficients in the text, the interested reader can find the complete tables in the corresponding appendices.

The Appendix tables are designed to attract scholarly attention for the practical significance of results and to avoid confusion with their statistical significance. Thus, I follow advice given by the proponents of the ‘practical significance’ approach, and include in the tables: 1) unstandardized coefficients; 2) standardized coefficients; and 3) lower and upper confidence intervals instead of uncertainty measures unlinked with coefficient’s size (e.g. standard errors or p-value). Statistical significance is still indicated with a star symbol.⁵⁸

6.2.3 Control variables

All the analyses involve the study of individual-level variables, and thus I include a number of individual-level features in the models in order to control for alternative explanations of the dependent variable under empirical scrutiny. Detailed information including exact question wording and descriptive frequencies is given in Appendix D.

Basic socio-demographics include: voters’ gender operationalized as a dummy variable (‘Male’ is set as reference); age, where I dismiss the continuous operationalization with practically uninterpretable linear and quadratic terms, and prefer five clear age categories indicators: 18–25 (generation Z or ‘post-millennials’), 26–35 (millennials), 36–50 (generation X), 51–65 (baby boomers), 66+ (silent generation); and the age at which the voter left full-time education⁵⁹ (three categories: left at < 15, left at 16–19, left at > 20; those still studying are imputed depending on their age).

Beyond these basic demographics, the list of controls stems from previous literature and includes additional important characteristics of the voters. In the first place, I include socio-

⁵⁸ When comparing standardized coefficients, we must keep in mind that one standard deviation increase in a dummy variable means that the standardized variable takes on values from -1 and +1 (instead of 0-1), thus about half the more intuitive full-range of a dummy. One option would have been to present coefficients standardized by dividing by 2 (instead of 1) standard deviations to maintain coherence (Gelman and Hill 2006, p. 57). Yet, I prefer the classic standardization, which means that we must look at unstandardized coefficients for roughly comparable estimates for dummy and categorical variables.

⁵⁹ More informative specifications for educational attainment are possible in the 2009 but not in the 2014 EES survey.

demographic features linking back to Rokkan's cleavages. The class cleavage is measured with two variables: self-perceived social class (five values from 'working class' to 'upper class'), and occupation (measured as 16 indicators).⁶⁰ The religious cleavage is captured by the religious denomination,⁶¹ and the frequency of attendance at religious services (six values from 'never' to 'more than once a week'). The rural/urban cleavage is measured by a dummy variable assuming value one if the respondent lives in an urban area. Additionally, I control for trade union membership; the income level is controlled through a dummy variable signalling if the respondent expressed experiencing 'sometimes' or 'often' difficulties in paying bills.

Moreover, I include two variables that are representative of voters' cognitive resources. The index of factual political knowledge is built from six knowledge questions both for the EP 2009 and the EP 2014 elections.⁶² Results are practically identical when operationalizing political knowledge as latent θ -scores from a two-parameter IRT model and as a simple additive index. Therefore, the latter, simpler choice is preferred. Moreover, I use a variable tapping the interest in politics and current affairs as empirical measure of the motivation to process political information. Next, I operationalize partisanship as a categorical variable with values for: 'No, I don't feel close to any political party' (N=18,581), 'Merely a sympathizer' (N=14,482), 'Yes, fairly close' (11,041), 'Yes, very close' (N=4,902).

⁶⁰ The list includes various types of workers (I give absolute frequencies in parenthesis): technical professionals (4472), senior administration (1320), clericals (7319), sales (1212), service worker (1844), skilled (4261), semi-skilled (988), unskilled worker (1617), farm worker (465), farm proprietor/manager (1628), student/in education (11685), voters who never had a job (3963), unemployed (4172), retired (9263), housepersons (1224), voters who did not respond (622).

⁶¹ Categorical variable including: No religious affiliation (14214), Catholic (22933), Protestant (7793), Orthodox (7862), Muslim (565), Jewish (55), Hindu (63), Buddhist (122), voters who refused/did not know how to answer (2448).

⁶² For EP 2009 elections the items were: 1) 'Switzerland is a member of the EU', 2) 'The EU has 25 member states'; 3) 'Every country in the EU elects the same number of representatives to the EP'; 4) 'The [national] Minister of Education is [country-specific name]'; 5) 'There are [150% of correct number] in the [lower house of the country]'; 6) 'Individuals must be [country-specific number] to stand as candidates in the [country] general elections'. A seventh item was not used due to missing country-specific correct answers recorded in the documentation. In the EP 2014 elections the EES changed item 2) for '[Name of the head of government] belongs to [name of correct party]'; and replaced the three EU statements with the following: 'For each of the following candidates for President of the next European Commission, can you tell me which European party group or which [nationality] political party supports their nomination?' The items were 'Jean-Claude Juncker', 'Martin Schultz', and 'Guy Verhofstadt', and the possible answers included: 1) 'Socialists and Democrats / [national party]'; 2) 'European People's Party / [national party]'; 3) 'Liberals and Allies Group / [national party]'; 4) 'The Greens / [national party]'.

Finally, in the last two specifications (H12 and H13) I also control for the Effective Number of Electoral Parties (Laakso and Taagepera 1979). While polarization indices capture the quality of competition, controlling for ENEP means to take into account its quantity, distinguishing party systems within the two opposites of two-party party systems with first-past-the-post electoral systems, on one side, and multiparty systems with proportional representation on the other.

6.2.4 Voters' ideology and EU position

Ideology and EU position of voters are statistical controls with a 'special status' in this dissertation. One of the core arguments I advance is that they cannot be measured without systematic error outside of the latent variable statistical framework, because we should not treat unobservable constructs *as if* they are observable. Yet, my choice is to present models that operationalize left-right ideology and EU integration in the standard way.⁶³ This strategy may seem out-of-line with all previous discussions, and this is partly true. In fact, I believe that voters' ideal points would be more informative than simple self-reported positions because they amend voters' distortions. Yet, I also believe that this specification may sound 'suspect' to a highly-sceptical reader who does not trust latent variables: in many instances this would practically mean to explain one latent variable with another. Thus, I resort to the standard measures to convince that reader that my findings are not artificial by-products of latent mathematical structures, but are indeed rooted in reality. Nevertheless, I also run all the estimates using voters' ideal points as interval measures, and related quadratic effects with the squared predictor. Even if the tables report the five categories of left-right ideology and position towards the EU, I will signal eventual discrepancies in the text. Finally, the five-indicator choice also makes it easier to detect asymmetric effects without having to compute and report predicted values (although this is done in the background for the ideal points' version of the models).

⁶³ I use the following five categories constructed from the [0-10] left-right and the EU integration self-reported positions: values [0- 2] are respectively coded as 'Left' and 'Strongly opposing EU'; [3-4] 'Centre-left' and 'leaning against the EU'; 5 as 'Centre' and 'Neutral towards the EU'; [6-7] as 'Centre-right' and 'leaning pro the EU'; [8-10] 'Right', 'Strong EU supporter'. Five categories are preferred to three (i.e. left, centre, right) as it allows for testing quadratic effects (with positive quadratic effects the coefficients of extreme categories should be larger than coefficients of the three centre categories).

6.2.5 Electoral availability

The dependent variable in hypotheses H12 and H13 is represented by voters' between-block electoral availability. In the classic account of Bartolini and Mair (1990), this construct is analysed at the aggregate level. Researchers normally use to this end the Pedersen index, which measures the electoral volatility in the electorate, considering half of the sum of absolute changes (electoral gains and losses) in party vote shares. There are three major limitations for studying the availability of the voters to electoral competition through an aggregate-level volatility index (such as the Pedersen index): 1) this index measures total volatility but in fact what really affects the nature of electoral competition in a party system is the between-block and not the within-block volatility, as firstly signalled by Bartolini and Mair (1990); 2) the Pedersen index, similar to any other aggregate index, infers individual features from their aggregate-level manifestations, thus exposing themselves to the dangers of ecological fallacy; and 3) volatility indices measure only the *realized* and not the *potential* voting switches.

The first problem has been addressed by distinguishing between two blocks of parties, in order to separate the within-block and the between-block components of total availability. Greater detail on the criteria used is given in the section discussing the theoretical model (see section 2.4.2). Thus, I assigned each party to: 1) either a left block or a non-left block; and 2) to a mainstream block or an anti-establishment block of political parties.

The second problem is automatically addressed because our analysis is defined at the individual level. Interested reader can refer to the discussion in Bartolini and Mair (1990, Chapter 2) regarding the statistical and mathematical justifications of using aggregate volatility to study individual-level electoral availability.

Finally, the third problem is to specify a measure that is able to capture not only the actual but also the potential availability of voters. In fact, the standard individual measure of volatility — vote switching — is likely to underestimate the extent to which voters are open to competition. Moreover, studying the event *after* it occurred severely limits our ability to predict the future unfolding of the party systems. Finally, another problem with vote switching involves the absence of pan-European panel datasets. This means that we should

necessarily use the suboptimal vote-recall questions, that are likely to underestimate change — as voters tend to conceal the cognitive discomfort it implies — and to be biased by current political preferences.

A more promising tool to study voters' electoral availability is to use non-ipsative measures of vote propensity (Propensities To Vote, PTVs).⁶⁴ Borrowing the words from Bartolini's (2002) discussion:

“van der Eijk and Oppenhuis (1991) have suggested ways to operationalize electoral availability at the individual level that are very promising as they are conceptualized to the issue of electoral competition. [...] they pick up this dimension with survey data in which people are asked about their willingness to vote for parties other than the one they prefer”. (Bartolini 2002, 94)

Standard voting items allow a voter to express their support for only one political party, whereas PTVs are designed to allow respondents to freely express their vote propensities not for one, but for all the relevant parties in the party systems. Generally, strong partisans assign a very high PTV to either one or two political parties. Also, in case the PTV is high for more than one party, partisans normally express high propensity for parties belonging to the same electoral block. Nevertheless, other independent voters are usually more open to electoral competition (i.e. they are more *available*) and can assign high voting propensities to political parties belonging to different electoral blocks. This is the idea of electoral availability, and this is the kind of openness to competition that we are trying to pin down. Therefore, in hypotheses H12 and H13 I will operationalize electoral availability as a dummy variable defined as follows:

$$ElectAvail_i = \begin{cases} 1 & \text{if at least one PTV} > 6 \text{ for each electoral block} \\ 0 & \text{otherwise} \end{cases}$$

⁶⁴ PTVs are better understood as measures of electoral utility rather than of electoral choice: “Citizens think and talk about voting and preferences more often in terms of party choice than in terms of utility. Consequently, survey questions intended to measure utility may be best cast in terms of choice in order to be comprehensible to respondents. To have such questions pertain to utilities and not to a choice, they have to free the respondent from familiar restrictions that apply to the real act of voting (often the restriction that one can vote for only one of the parties), and that do not apply to utilities. Cardinality of utility should be reflected in non-ipsativity of observations (i.e. the number of observations equals the degrees of freedom). Probabilities are obviously ipsative, owing to the fact that they sum to a fixed total (i.e. df [degrees of freedom] is smaller than the number of parties)”. (van der Eijk, van der Brug, Kroh and Franklin 2006).

Thus, a voter is defined ‘electorally available’ if they assign a high propensity to vote (i.e. strictly greater than 6, which means a relatively high probability) to *at least* one party for *each* of the two electoral blocks. Considering the left-right dimension (availability between the left and the centre-right blocks) and the integration/demarcation dimension (mainstream and challenger parties’ blocks) I created two separated between-block availability variables, respectively: $ElectAvail_{i,LR}$ and $ElectAvail_{i,MC}$.

As an illustration, consider two hypothetical blocks Block 1 and Block 2, and two hypothetical parties Party A and Party B, then a voter i assigning a $PTV_{i,A \in 1} = 7$ to party A belonging to Block 1, and e.g. a $PTV_{i,B \in 2} = 9$ to party B in Block 2 would be coded as available ($ElectAvail_i = 1$). In case *either* $PTV_{i,A \in 1}$ *or* $PTV_{i,B \in 2}$ is smaller than 7 (the threshold is set as strictly greater than 6), then the voter would be coded as not available ($ElectAvail_i = 0$).⁶⁵

The potential of this design can easily be generalized. For instance — although I will not explore this intuition here — researchers could create an *electoral engagement* indicator. This would be the subset of electorally non-available voters who e.g. have $\max\{PTV_{ip}\} < 6$. Thus, we could now easily distinguish between: electorally disengaged voters, electorally engaged but not available voters, and electorally available voters. Alternatively, we could try more complex specifications. For instance, it is also possible to apply the Hirshman-Herfindahl concentration index to PTVs to achieve a continuous measure. This being one of the first empirical applications of PTVs as measure of electoral availability, I opt for the easier and more intuitive dummy-variable solution.

Overall, with respect to the left and centre-right blocks, I count 9,583 electorally available (18.57 per cent), and 42,033 (81.43 per cent) unavailable voters across all the 54 elections. The share of available voters at the EP 2009 was 22.16 per cent (N=5,576), while in 2014 the share of electorally available voters decreased to 15.14 per cent (N=4,007), with 84.86% of non-available voters (N=22,452). In Appendix E and Appendix F I report six figures (Figures E.1–E.6 and F.1–F.6) showing the striking variation arising from the average proportions of available voters across the European countries on both considered blocks of parties. The shares of voters electorally available between the left and the centre-right blocks ranges

⁶⁵ Similar indicators of availability could be also computed *within* blocks, considering as within-block available voters assigning at least two $PTV > 6$ for one block.

between the 2.66% registered in Bulgaria in 2014 and the 45 per cent registered in The Netherlands in 2009. The patterns of these country proportions seem to reveal the lowest values for Eastern European and Mediterranean countries. On the other side, continental or northern multiparty systems display larger scores (Finland, Luxembourg, The Netherlands, Belgium and Denmark). At the same time, in a number of countries the level of availability between left-right blocks shrank quite substantially, as in Luxembourg and Slovenia, where I observe a decrease in the shares of available voters of respectively 24.7% and 22.9%. Overall, the new variable reveals a striking degree of almost unexplored source of variation which merits closer examination.

I can also observe a sizeable amount of variation in the distribution of country levels of electoral availability between the block of mainstream parties and the block of anti-establishment movements. The empirical range lies between the 1.8% of available voters in Malta to the 34.9% share of available voters in Italy in 2009. The latter result is quite astonishing, because it suggests that more than one third of the electorate of a founding member of the EU was actually ready to electorally shift to/from the block of anti-establishment political forces including the far-right (Northern League and The Right) and the communist far-left. Even more striking is the variation in the change over time in the share of availability. The share of voters potentially open to switch vote between the mainstream and the challengers' blocks in Italy shrinks by 20% between 2009 and 2014. Since the share of anti-establishment vote in Italy at the EP 2014 sums up to about 30% (including the Northern League, the Five Stars' Movement and The Right), this suggests that a process of encapsulation on the second dimension may be at work. On the other hand, in countries where populist forces are expanding (the Swedish Democrats passed from 5.7% at the 2010 Swedish general elections, to 9.7% at the EP 2014 elections, and 12.9% at the September 2014 Swedish general elections) voters' availability is also expanding, suggesting that the new dimension might be opening to electoral competition.

6.2.6 Party system polarization

In section 3.2 we have identified four elements as key attributes of the concept of political polarization. In the first place, we pointed out that polarization underlies a measure of

distance among positions. Thus, the further apart the political actors, the greater the level of polarization. This is a key point that has been stressed throughout this thesis. We need two things to measure a distance: 1) positions measured at the interval level, which is the only measurement level for which the distance between values is meaningful and interpretable; and 2) a position measured objectively, meaning that we should control for the effect of the subjectivity of perceptions at the individual level, and of cultural specificities at the country level. These latent distortions can produce spurious measures of policy distance. Only when all positions are mapped onto a measurement space with shared endpoints and distance metric we can meaningfully compare political distances.

In the second place, measuring the distance among political positions requires us to identify the correct underlying salient policy dimension(s). We may obtain flawed positions if we consider secondary sources of political disagreement. This issue was substantiated in Chapter 3, where we dealt with the meaning and content of latent dimensionality in the political space. We opted for a deductive, theory-led identification strategy, and selected the left-right ideology and the position towards the EU integration project as the two basic factors currently constraining issue positions in European party systems.

Thirdly, in the context of rationality of political actors and the spatial voting perspective that follows, we need a directional position rather than a measure of intensity of feelings. In fact, while the latter can signal the presence of a political conflict, only the former can provide information on where (i.e. on which underlying policy dimension) the conflict takes place.

Finally, we must consider only those political parties that are minimally influential. Thus, we should apply some type of threshold to exclude marginalized political actors and only examine relevant parties. At the same time, we must also consider the electoral weight of the political parties included in the pool of the minimally influential. This means that in two-party system identical in all but for the electoral weight of two parties, one more extreme and the other more moderate, then we should have a larger value of polarization in the party system where the more extreme party wins a larger share of vote.

The Dalton index of party system polarization (Dalton 2008) applied on comparable measures of parties' policy positions would satisfy all previous requirements. This index, as explained in section 3.2.2 is constructed as a weighted standard deviation of party positions measured through voters' perceptions:

$$PI_k = \sqrt{\sum_{j=1}^J \omega_j * \left[\frac{p_j - \bar{p}}{5}\right]^2};$$

where, as recalled, ω_j is party j vote share, p_j indicates its left-right position, and \bar{p} is the weighted average left-right position in the party system. At this point, on the basis of all previous discussion, we suspect that there are at least two reasons why the standard Dalton index may lead to a flawed measurement of political polarization.

First, left-right ideology is not necessarily the only dimension of political contestation.⁶⁶ Second, we have demonstrated with extensive validation the difference between what voters perceived and what voters report, together with the consequent incomparability that arises from this source of subjectivity. When voters' distortions are not taken into account we cannot winnow the objective political positions from the subjective definition of the latent spaces. This, in turn, means that polarization indices may conflate two different constructs: the objective polarization stemming from objective party positions, and subjective latent distortions of voters, leaking into party positions and then into polarization indices.

To address these two fundamental arguments, I will operationalize political polarization with four separated indices. First, I consider the standard Dalton index (i.e. the Polarization Index computed with the raw average perceptions of the voters regarding political parties) with reference not just to left-right polarization, but also to the EU integration dimension:

$$PI_{Dalton,LR} = \sqrt{\sum_{j=1}^J \omega_j * \left[\frac{p_{j,LR} - \bar{p}_{LR}}{5}\right]^2};$$

⁶⁶ This has been widely documented in the theoretical part of this thesis. Contemporary party systems are also lacerated in terms of the defence of national sovereignty from the immigration pressure (particularly from the right-wing perspective opposing a Europe without borders) and from the ominous consequences of imposed austerity and welfare retrenchment policies (particularly from the left-wing perspective opposing a neoliberal Europe). This cross-cutting second dimension that divide partisan politics *within* party lines should not be overlooked any more, as also the recent Brexit referendum in the United Kingdom and the electoral victory of Mr. Trump in the United States have demonstrated.

$$PI_{Dalton,EU} = \sqrt{\sum_{j=1}^J \omega_j * \left[\frac{p_{j,EU} - \overline{p_{EU}}}{5} \right]^2}.$$

Where: $p_{j,LR}$ represents the left-right position of party j measured as raw average of all voters' reported perceptions, and $p_{j,EU}$ is the average perceived position of party j in terms of support/opposition to the EU integration; $\overline{p_{LR}}$ and $\overline{p_{EU}}$ indicate the respective weighted averages in the party systems on the first and on the second dimensions.

Next, I consider a version of the Dalton index built with the ideal points' position rather than the standard average positions:

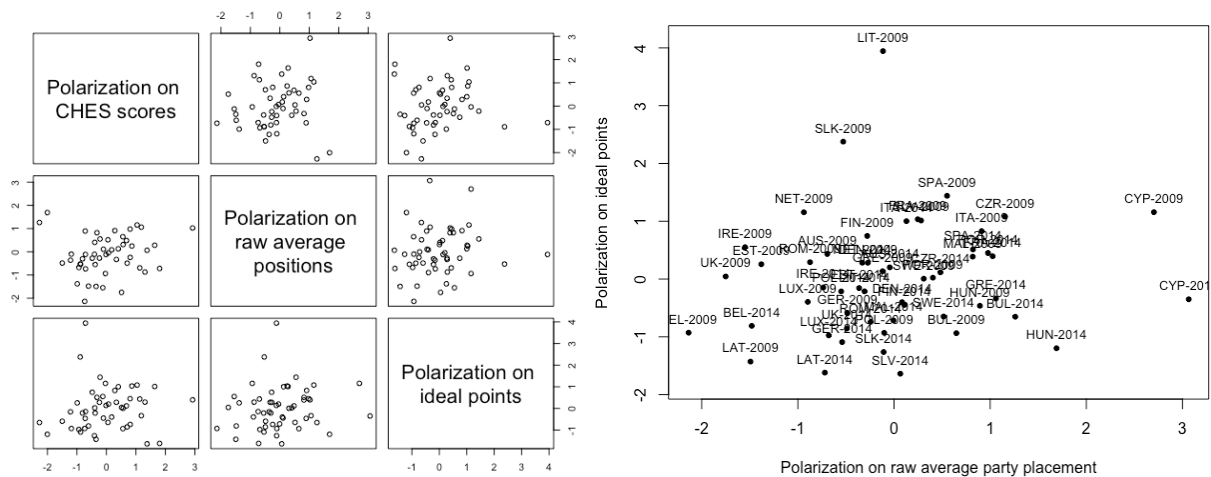
$$PI_{ideal,LR} = \sqrt{\sum_{j=1}^J \omega_j * [y_{j,LR}^* - \overline{y_{LR}}]^2};$$

$$PI_{ideal,EU} = \sqrt{\sum_{j=1}^J \omega_j * [y_{j,EU}^* - \overline{y_{EU}}]^2}.$$

In these new 'ideal-point' version of the Dalton index, $y_{j,LR}^*$ and $y_{j,EU}^*$ represent political parties' ideal points respectively on the first and on the second latent dimensions produced with the 2S-BAM procedure introduced in Chapters 4–5; similarly, $\overline{y_{LR}}$ and $\overline{y_{EU}}$ indicate the weighted average of party ideal points in the party systems on the first and on the second dimension.

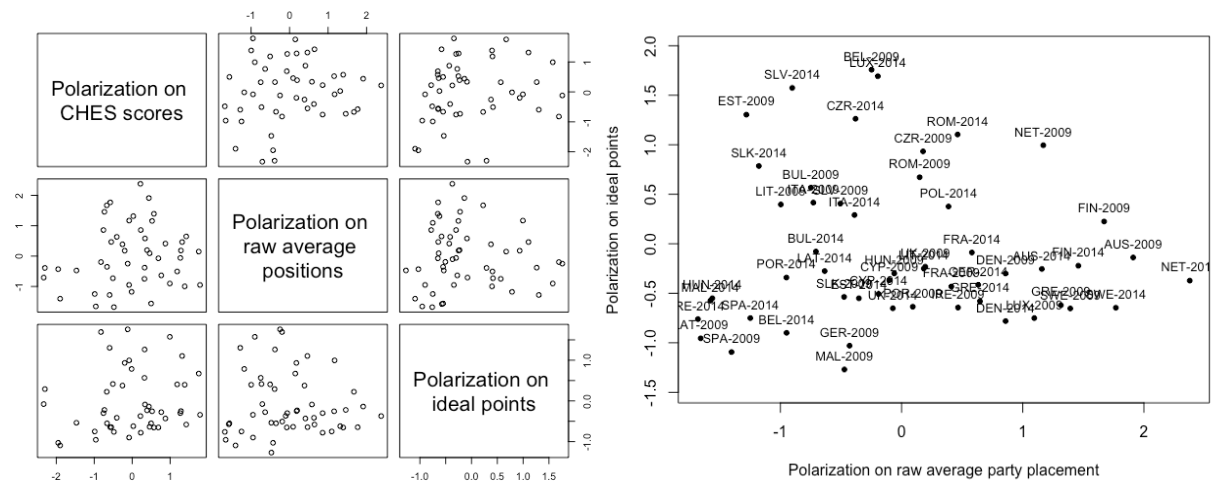
The following figures 6.1 and 6.2 provide a graphical visualization of the polarization indices, referring respectively to the left-right and to the European integration dimension. As an additional benchmark, the left side in both graphs shows the correlation matrix between the two considered measures and the polarization index computed with CHES scores.

Figure 6.1 — Measures of left-right party system polarization



Note: the two plots illustrate the relationship between the measures of ideological polarization. The scatter plot matrix on the left shows the relationship between three measures: 1) the polarization index computed with CHES scores (not used in later analyses and presented only as a benchmark); 2) the polarization index computed with raw average perceived left-right positions; 3) the polarization index computed with party ideal points for the first dimension. The scatterplot on the right provides a closer representation of the relationship between $PI_{ideal,LR}$ (Y-axis) and $PI_{Dalton,LR}$ (X-axis).

Figure 6.2 — Measures of party system polarization of European integration positions



Note: the two plots illustrate the relationship between the measures of polarization in terms of EU attitudes. The scatter plot matrix on the left shows the relationship between three measures: 1) the polarization index computed with CHES scores (not used in later analyses and presented only as a benchmark); 2) the polarization index computed with raw average perceived party positions towards EU integration; 3) the polarization index computed with party ideal points for the second dimension. The scatterplot on the right provides a closer representation of the relationship between $PI_{ideal,EU}$ (Y-axis) and $PI_{Dalton,EU}$ (X-axis).

The two new measures of party system polarization will be tested in hypotheses H9 and H10 where I study whether party system polarization is associated with individual-level latent

stretch distortions. If that is the case, we would be conflating two separated concepts into a single measure and would be unable to separate the two. When studying voters (see H1–H8) we can find these subjectivity-related distortions very interesting as they help increase our knowledge of electorates, but when studying party systems, we are only interested in the objective level of polarization, and thus we want to ensure that voters' scale distortions are separately considered.

Having presented all the main variables that will be used in the empirical analyses, we can finally proceed testing the theoretical hypotheses.

6.3 Explaining latent lateral shift distortions (H1–H4)

Why do some voters shift the reported perceptions of political parties' stance? Is this source of incomparability of perceptions systematic and can it therefore be explained? Idiosyncratic time-invariant effects such as scale distortions are generally accounted for in panel data designs through the inclusion of fixed effects. The Aldrich-McKelvey framework proves superior because, in addition to allowing for the statistical control of nonlinear idiosyncratic effects, it also allows their explicit estimation and thus make it possible to study these latent distortions.

I hypothesized that latent lateral distortions of the endpoints of the political space as subjectively perceived by voters may be rooted in the group-identity theory. The mechanisms of ingroup favouritism and outgroup negativity may lead voters to report perceptions that are systematically favourable to the former and unfavourable to the latter. If we add the widespread moderation bias that potentially leads more extreme voters to underestimated their own extremism, this means that ideologically extreme voters may perceive the ideology space as systematically shifted compared to the space on which perceptions of ideologically moderated voters are mapped. Thus, hypotheses H1–H4 are tested using the latent parameters a_i as dependent variable. Positive (negative) values mean that voters perceive political parties as systematically more right-wing (left-wing) than they actually are (i.e. with respect to latent ideal point positions). Thus, the main expectation (H1) is that left-wing (right-wing) voters are associated with positive (negative) shift distortions. I test the explanations provided in hypotheses H1–H4 with a set of linear hierarchical models,

where voters' latent lateral distortions are modelled as nested within elections, thus adding a random intercept at the election level to control for unobserved heterogeneity between countries and election years. The baseline varying intercepts regression (corresponding to H1) is described by the following two equations:

$$a_{ik} = \beta_0 + \beta_1 LR_{ik} + \boldsymbol{\beta X} + u_{k[i]} + \varepsilon_{ik};$$

$$u_k \sim N(\mu_0, \sigma_\alpha^2).$$

Where: a_{ik} are voters' lateral distortions, $\beta_1 LR_{ik}$ is voters' ideology, $\boldsymbol{\beta X}$ indicates a set of statistical controls; and $u_{k[i]}$ are election-level random intercepts, normally distributed with mean in the global average μ_0 and standard deviation of unexplained group-level errors σ_α^2 . As previously explained (see section 6.2.3), LR_{ik} is in fact a set of five indicators constructed from the standard left-right self-placement item. Non-linear effects (as in H2) can be detected comparing the five indicators, i.e. larger positive (negative) effects for the 'left' and 'right' categories compared to the 'centre-left', 'centre', and 'centre-right' ones would correspond to a more readable form of a positive (negative) coefficient of the quadratic term. Similarly, positive (negative) coefficients for 'left' and 'centre-left' ('right' and 'centre-right'), would be equivalent to a positive coefficient for the linear predictor.

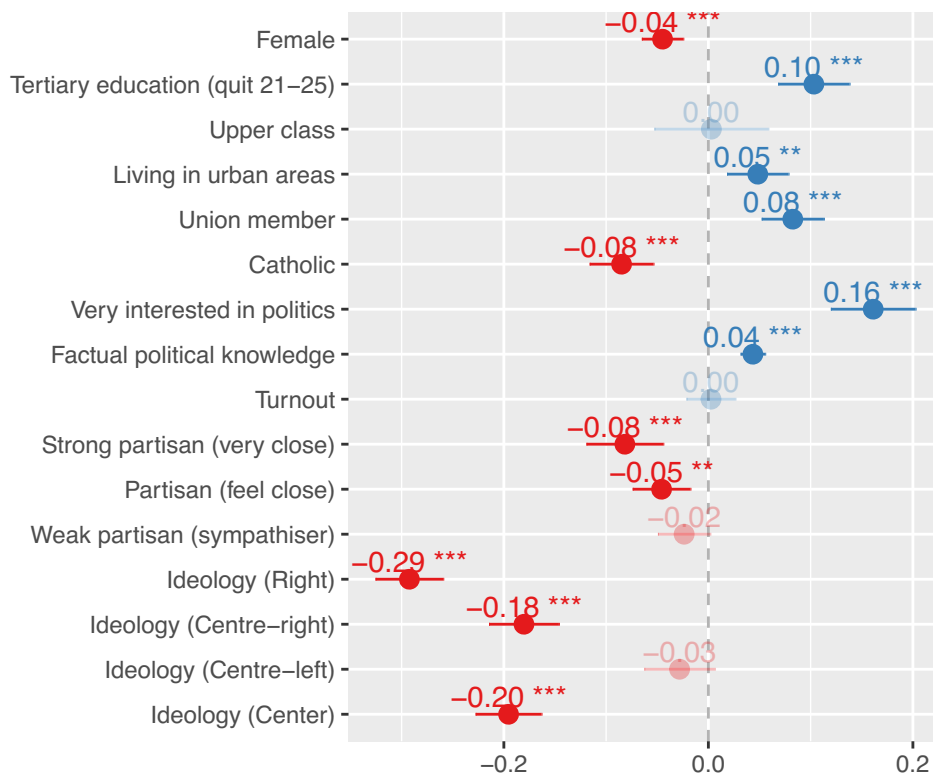
I test hypotheses H1–H4 using the four different models reported in Appendix G. Model 1 includes a baseline version with only basic controls (age category, gender, years of full-time education, social class, urban residence, trade union membership, religious denomination, church attendance, economic condition), voters' cognitive resources (interest in politics, factual political knowledge) and party identification. Model 2 adds left-right ideology, providing a test for hypotheses 1 and 2. Model 3 allows to test hypothesis 3 by adding the interactions between left-right ideology and interest in politics. Finally, Model 4 tests hypothesis 4 adding to Model 2 the interactions between left-right and party identification. Overall, the models explain about 20% of the variance, which is acceptable given that we are dealing with individual latent constructs and given that this represents, to the best of my knowledge, the first comparative study of such constructs.

Results

We start from the baseline Model 1. Among the socio-demographic factors, I register the tendency of highly educated voters and highly motivated voters (i.e. voters more interested in politics) to perceive parties as more conservative than they actually are. The same appears to apply for unionized voters, and for voters living in urban areas. On the contrary, Catholic voters appear to perceive parties as systematically more progressive than voters without religious affiliation.

Figure 6.3 shows unstandardized regression coefficients for the main predictors of Model 2,⁶⁷ including all baseline covariates and the five dummies for ideological self-placement.

Figure 6.3 — Coefficients’ plot for latent lateral distortions (H1-H2)



Note: the figure shows a selection of unstandardized regression coefficients from Model 2 (with ideology’s reference category ‘left’). The corresponding full table is reported in Appendix G. Insignificant coefficients are displayed with faded colours.

⁶⁷ There is only one minor difference with the table in Appendix G: the model in Figure 6.3 uses ‘Left’ as reference category for ideology, to highlight the overall effect (i.e. from ‘Left’ to ‘Right’). The model in Appendix G uses ‘Centre’ as reference category. Thus the overall effect can be approximated summing the two standardized coefficients for ‘Left’ and ‘Right’ in the table.

When we look at the coefficients, we see that left-right self-placement is indeed the strongest predictor of the latent lateral distortions. A self-declared left-wing voter, compared to a right-wing one, differs on average in terms of shift distortion by -0.29 units (corresponding to a $1-\sigma$ change of -0.12). This represents the largest predictor for latent distortions and provides empirical support for hypothesis 1. Moreover, observing the other categories of left-right ideology, we observe how the change affects the extreme category of the right to a disproportionate extent, but the same pattern is not found for the left. Indeed, we note from the plot that 'centre-left' category is not significantly different from the reference category, 'left'. Thus, 'centre-left' voters appear to distort their perceptions as much as left-wing voters. Centre-right voters, on the other hand, appear to distort about as much as the 'centre' category, while the extreme 'right' systematically distorts party positions as being more leftist than centrist and centre-right voters.

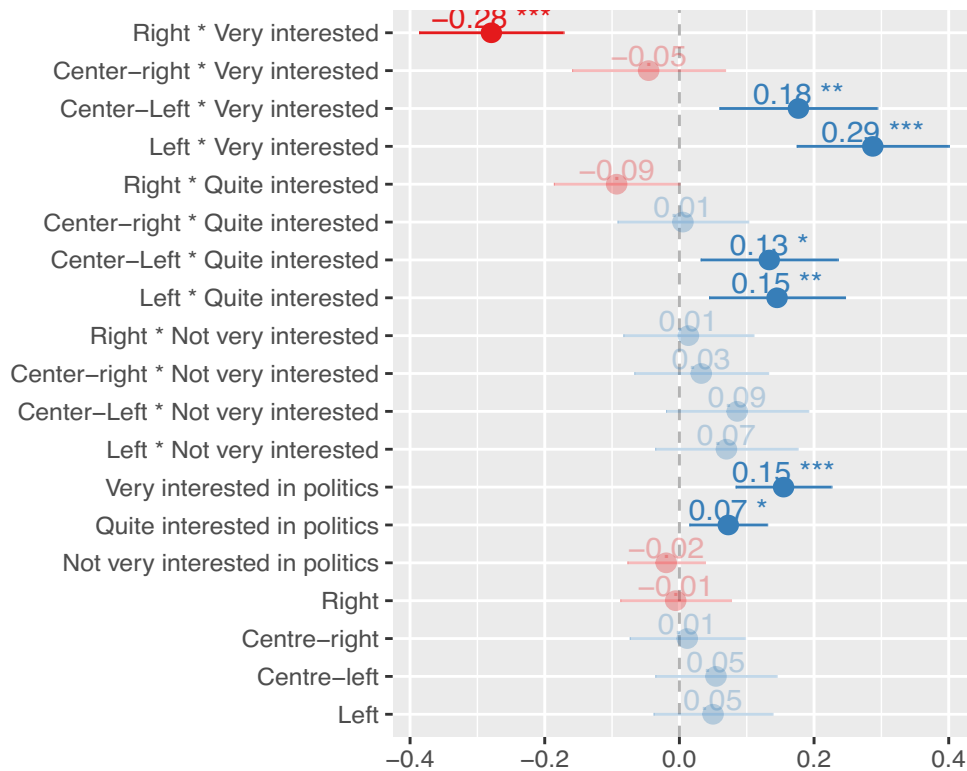
Next, I run an alternative version of Model 2 (not shown) that treats left-right ideology as a continuous variable, and thus I also include a quadratic term. This alternative version produces a standardized coefficient for left-right of -0.06 (significant at $p < .001$), and for the squared term of -0.05 (significant at $p < .01$ level). These estimates suggest that: 1) more right-wing voters perceive parties as more left-wing; 2) the more extreme the voter the stronger the effect. Yet, the asymmetric relation is not evident in this alternative specification, but was previously detected with the five dummy variables.

Finally, I run a third version of Model 2, this time using the linear and quadratic term of the estimated 2S-BAM ideal points instead of standard left-right. In the previous Model 2 (with continuous left-right) the adjusted- R^2 was 19.5%. Simply replacing the standard left-right variables with the left-right ideal points (again considering linear and quadratic terms), the R^2 leaps to 29.4%. The standardized coefficient for the linear term has now tripled to -0.31 (significant at the $p < .001$ level), and the quadratic term is -0.07 (again significant at $p < 0.001$). Once again, the explanatory power of the ideal points appears to be superior, and the magnitude of ideological coefficients results amplified. All this evidence points to the confirmation of hypotheses 1 and 2.

Hypothesis 3 states that lateral distortions are stronger for highly motivated voters (i.e. very interested in politics). To understand if this is the case, Model 3 adds an interaction term

between the left-right ideology (reference category set on 'Centre') and the four categories of the interest in politics variable. Figure 6.4 shows a selection of unstandardized coefficients (all interacting terms are dummy variables), while the full table is reported as Model 3 in Appendix G. All other controls are similar to Model 2 and thus excluded to allow us to focus on the relevant interacting terms.

Figure 6.4 — Coefficients' plot for latent lateral distortions (H3)



Note: figure shows a selection of unstandardized regression coefficients from Model 3 (with ideology's reference category 'Centre'). The corresponding full table is reported in Appendix G. Insignificant coefficients are displayed with faded colours.

Model 3 reveals how the coefficients previously observed are in fact averages across very heterogeneous groups. These are all conditional coefficients, and the reference categories are 'Centre' for ideology, and 'Not at all interested' for the interest in politics variable. Thus, the direct coefficients for ideology must be understood as the effects on shift distortions for voters not interested in politics (conditioned on the interacting variable being zero). In this pool of voters (at the bottom of the figure), no differences are detectable. The direct coefficients for interest in politics refer to centrist voters. Thus, we discover that self-

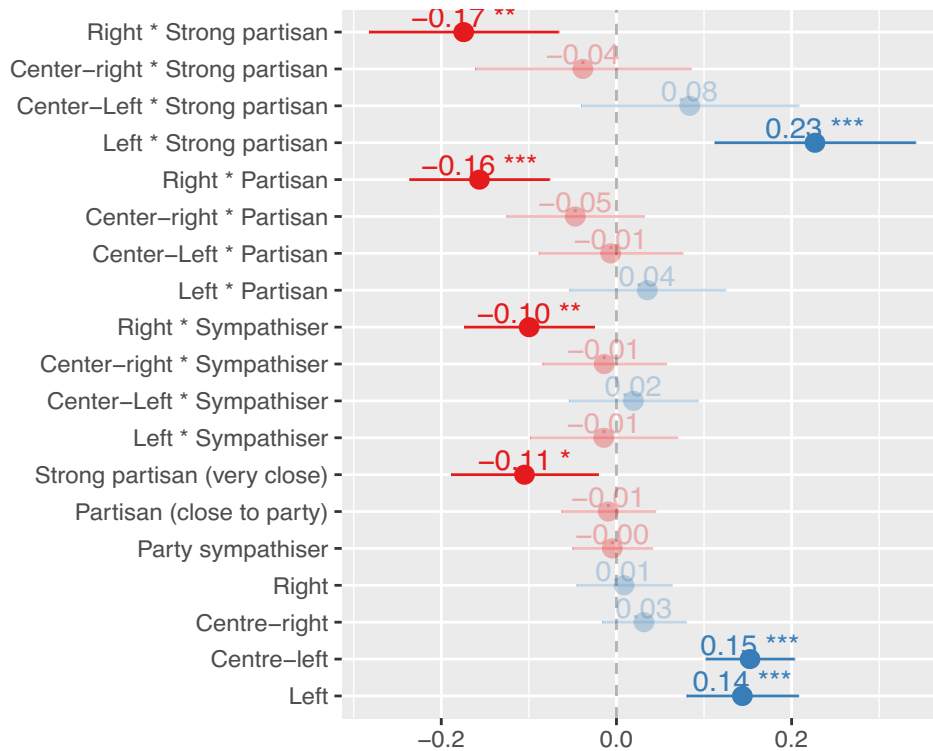
reported 'centre' voters misperceive party positions as being more conservative than they actually are. This is compatible with the previous finding from Model 2 that centrist voters do not systematically differ from centre-right voters. Then, I detect some difference among those 'quite' interested in politics, but only for left-wing and centre-left voters. This helps clarify the previously detected asymmetry of effects. Finally, it is among the pool of very interested voters that the rationalizations of party positions distort the most reported perceptions. Among these highly motivated voters, left-wing, centre-left and right-wing voters distort their preferences towards the other ideological extreme.

I run two alternative versions of Model 3 (not shown). The first uses left-right as a continuous predictor, the second one uses the latent ideal points of the voters. In both cases ideology predictors have been standardized. In the first case, the left-right direct coefficient is $\beta_{lr} = -0.02$ ($p = .231$), signaling no differences among voters 'not at all' interested in politics. The three interaction terms (for low, middle, and high motivation times left-right) are respectively $\beta_{(not\ very*lr)} = -0.01$ ($p = .15$); $\beta_{(quite*lr)} = -0.06$ ($p < .001$) ; $\beta_{(very*lr)} = -0.09$ ($p < .001$) . Thus, more right-wing voters are associated with negative latent distortions (i.e. to the left), but only if political motivation is high. In the second case, the direct coefficient is already strong and significant: $\beta_{ideal} = -0.29$ ($p < .001$), the three coefficients are halved $\beta_{(not\ very*ideal)} = -0.01$ ($p = .35$); $\beta_{(quite*ideal)} = -0.03$ ($p < .001$); $\beta_{(very*ideal)} = -0.04$ ($p < .001$) . The ideal points thus confirm the interaction effect, although reducing its role (as most of the distortion is already in the baseline direct term).

The evidence thus not only confirms hypothesis 3, but shows that only motivated voters rationalize party positions in a way that facilitates their own view of the world (e.g. political parties are too conservative according to left-wing voters).

Finally, I conclude this first empirical section testing hypothesis H4 (i.e. partisan voters distort perceptions more than independents). Model 4 introduces the interaction between ideology and strength of party identification. Here too, Figure 6.5 reports conditional coefficients, and the reference categories are 'Centre' for ideology, and 'Independent' for the partisanship variable.

Figure 6.5 — Coefficients' plot for latent lateral distortions (H4)



Note: figure shows a selection of unstandardized regression coefficients from Model 4 (with ideology's reference category 'centre'). The corresponding full table is reported in Appendix G. Insignificant coefficients are displayed with faded colours.

I will start by pointing out a counterintuitive finding from Figure 6.5: independent centrists appear to be a neatly different category of voters than strongly partisan centrists. If we look at the direct coefficient of partisanship ('strongly partisan'), we note how centrist voters who feel very close to a party see the ideological space from the perspective of right-wing partisans: shifted to the left ($\beta_{strong\ pid*center} = -0.11$). Centre-right and right-wing independent voters (direct effects of ideology refer to independent voters) do not appear to differ from their independent centrist equivalents. It is interesting to note that centre-left and left-wing independents are already colouring their views of party positions. My perception is that this finding suggests that for left-wing voters the sense of ideological identification may be stronger than the sense of party identification. On the contrary, right-wing voters shift their policy space only to the extent that they are partisan. Thus, identification with a party seems to prevail over ideological identification. In this sense, I would advance the conjecture

that left-wing voters tend to identify with political values and social groups while right-wing voters with actual parties. Overall, the evidence supports the view that party identification represents an additional source of lateral latent distortions of party positions.

Finally, for Model 4 I also run the two alternative specifications (standard left-right and then ideal points interacted with the strength of partisanship). In the first case, the standardized coefficient for the direct effect of ideology, and the three interactions (sympathizer, partisan, and strong partisan multiplies by left-right) are respectively $\beta_{lr} = -0.06$ ($p < .001$); $\beta_{(symp*lr)} = -0.01$ ($p = .07$); $\beta_{(partisan*lr)} = -0.03$ ($p < .001$); and $\beta_{(strong\ partisan*lr)} = -0.05$ ($p < .001$). This provides additional support to hypothesis 4, as it shows that right-wing independents latently shift parties to the left (negative direct term) and this latent shift is larger for partisans and strong partisans.

As for the ideal points' version of Model 4, the previous four coefficients become: $\beta_{ideal} = -0.32$ ($p < .001$); $\beta_{(symp*ideal)} = 0.01$ ($p = .61$); $\beta_{(partisan*ideal)} = 0.01$ ($p = .31$); and $\beta_{(strong\ partisan*ideal)} = -0.00$ ($p = .67$). This time party identification has no effect on latent lateral distortions. It is worth noting that the ideal points capture the effect of partisan leanings *entirely*: if we ask voters to report their perceptions of parties' stance and we use this information to estimate their perceptual distortions, then we learn where the centre of their subjective political space is situated in such a way that knowing whether or not they are partisan does not increase further our ability to predict perceptual distortions. In other words, estimating voters' ideal points means that we can look at the world wearing their own partisan lenses. This also seems to clarify better the stronger predictive capacity of ideal points shown in the validation sections. Ideal points condensate a great deal of information: not only self-reported ideology, but also the way voters perceive the policy space, inferred from the way they position parties. In practice, some of the explanatory capacity that we were attributing to party identification is likely to stem from voters' ideology, although we were missing this crucial piece of information due to flawed measurement and poor model specification.

In conclusion, the empirical models appear to lend support to the group-identity view that voters' ideology triggers a mechanism of outgroup negativity that translates into an 'extremization' of political opponents' perceptions, together with a moderation of one's own

political positions, as posited in hypothesis 1. This mechanism appears to be stronger for more extreme voters, but this view is only supported for left-wing voters: right-wing voters do not appear to latently shift political parties towards the left more than centre-right voters. Thus, hypothesis 2 is only partly confirmed (i.e. for left-wing voters). Next, we learned that not all subgroups of voters misplace parties to the same extent. In fact, as presented in hypothesis H3 only highly politically motivated voters have the cognitive interest to trigger such a mechanism, while no differences are detected for voters not interested in politics. Some asymmetry is also revealed in the conditional coefficients in Model 3, as voters with an average interest in politics were observed to shift political parties, but only insofar as they self-place themselves on the centre-left (6 to 7) or to the left (8 to 10). Finally, hypothesis 4 was tested in Model 4: on average, partisan voters do misplace parties the most, but this effect is observed mostly for right-wing voters. In fact, centre-left and left-wing independents, leaners and moderate partisans⁶⁸ already perceive political parties as too conservative, although strong left-wing partisans exacerbate this misperception. This evidence generates the suspicion that, among left-wing voters, ideological identity is what colours political views most, while for right-wing voters it is partisan identity that matters.

Finally, in every model specification, the role played by ideology is magnified and the weight of the other controls and interacting factors is reduced, if we use voters' ideal points' location instead of standard left-right self-declared positions. The main intuition resulting from these empirical findings is that ideal points are in fact a transformation of self-reported ideology that already incorporates the way voters perceive ideological space. Thus, they condensate additional information, and this explains why they improved voting predictions in the previous validation sections quite radically, and improved the explanatory ability for latent distortions in this section.

At this point we have learned that voters systematically shift the origin of their ideological space. Left-wing voters on average judge party positions by relying on a benchmark-origin of that space that is situated more to the left. This generates the consequence that they tend to shift political objects to the right. One can also examine this phenomenon in terms of the

⁶⁸ One can see this in Model 4 (or Figure 6.5) from the fact that the sympathisers and the partisans' coefficients are not significantly different from the baseline effects for 'independent' category, which in case of the centre-left and left voters are already significant. Thus, the 'left* strong partisan' effect refers to an increase to the baseline level.

meaning of endpoints. For left-wing voters, the left end point is situated more to the left, and the same occurs for right-wing voters. Thus, at the moment of positioning themselves or a certain party, they project that position on a plane where the meaning of the 'left' label is further to the left than for other voters. Latently moving this endpoint, moves practically everything else to the right.

6.4 Explaining latent stretch distortions (H5–H8)

In this section I will systematically study voters' latent scale distortions, b_i . Larger (smaller) scale distortions basically indicate that political parties are perceived as being further apart (closer) than they actually are. Hypotheses H5–H8 present three basic mechanisms that could produce differences in the scale in which voters report left-right perceptions. Hypotheses H5 and H6 basically rely on a cognitive-resource explanation, H7 on an ideological mechanism, and H8 proposes that partisanship might also play a role.

As in the previous model specifications, I test these hypotheses by means of linear hierarchical models (where voters' latent scale distortions are clustered within elections), adding a random intercept at the election level to control for unobserved heterogeneity. The baseline regression (corresponding to H5) is the following:

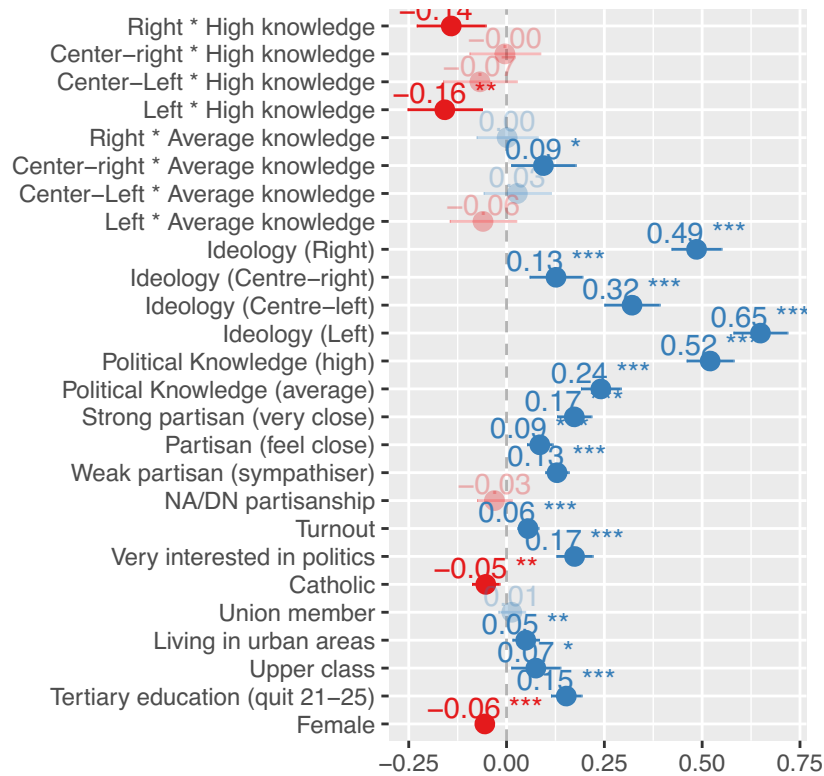
$$b_{ik} = \beta_0 + \beta_1 Pol\ Know_{ik} + \beta X + u_{k[i]} + \varepsilon_{ik};$$

$$u_k \sim N(\mu_0, \sigma_\alpha^2).$$

Where: b_{ik} are voter i scale distortions, and again βX indicates a set of statistical controls, and $u_{k[i]}$ are election-level random intercepts. The complete table from the four empirical models is reported in Appendix H. The models also control for all covariates previously considered for modelling latent shift distortions. Model 5 includes factual political knowledge, and Model 6 adds left-right ideology, which will provide a test for hypotheses 7a and 7b. Furthermore, Model 7 adds the interaction between the previous two variables, allowing us to test hypothesis H6 (the numbering is inverted due to the nested interaction effect). Finally, I add partisanship in Model 8 to test H8. To facilitate the comparison of coefficients I recode factual knowledge into three categories ('low', 'average', and 'high')

political knowledge).⁶⁹ I present the estimates from the full model (Model 8, Appendix H) in Figure 6.6.

Figure 6.6 — Coefficients’ plot for latent scale distortions (H5–H8)



Note: figure shows a selection of unstandardized regression coefficients from Model 8 (with ideology’s reference category set at “Centre”, and for political knowledge at “Low”). The corresponding full table is reported in Appendix H. Insignificant coefficients are displayed with faded colours.

The baseline model fit is obtained by running a model that includes all control variables,⁷⁰ which produces a baseline adjusted- $R^2 = 0.22$, and $AIC = 123,030$. We start with hypothesis H5, tested in Model 5 (that includes both interest in politics and factual political knowledge). In this case, the R^2 value increases to 0.25, while the AIC is reduced to 121,702. Looking at the coefficients, it seems that all input variables somehow related to cognitive resources/involvement and larger exposure to political reasoning are positively correlated

⁶⁹ Recoding knowledge scores from 0 to 2 into ‘low’, those in [3–4] into ‘average’, and [5–6] into ‘high’ I obtain respectively a numerosity of 17,511, 24,889, and 13,655 for the three categories.

⁷⁰ On the subset of non-missing observations in later models, in order to enables the comparability of coefficients.

with stretch distortions: all age categories compared to the youngest post-millennials (who are probably still in the initial stage of the process of political socialization), all social classes compared to the working class, tertiary education compared to lower educational attainment, higher income voters, and voters who reported to have voted at previous elections.

The effect of both factual political knowledge and interest in politics is strong and statistically significant at the $p < .001$ level. Comparing the coefficients, the magnitude of factual political knowledge and interest in politics prove to be the strongest predictors of voters' latent scale distortions. Coefficients for high knowledge and high interest in politics in Model 5 are respectively $\beta_{High.know} = 0.45$, and $\beta_{polint} = 0.29$, which suggests that resources matter slightly more than motivation. In terms of explained variance and likelihood, factual knowledge also performs slightly better. A model with the basic controls that includes factual political knowledge and excludes interest in politics produces $R^2 = .239$ and $AIC = 122,231$, a model with interest in politics and no factual knowledge $R^2 = .231$, and $AIC = 122,331$. Overall, hypothesis 5 is not falsified, and, on average, greater political knowledge gives results associated with broader perceived positions of political parties.

Next, I consider Model 6 that explores the direct effect of ideology on scale distortions and represents a test for the two mutually alternative hypotheses H7a and H7b. Evidence seems to provide strong support for H7b and disconfirms H7a: more ideologically extreme voters perceive political parties as further apart (left-wing and right-wing voters are associated on average with respectively a 0.61 and 0.48 increase in scale distortion). There is also evidence of a nonlinear relationship, as the coefficients for left-wing and right-wing voters' groups are larger than those for centre-left and centre-right voters (respectively associated with average increases of 0.33 and 0.19 in the scale distortions). The 'confrontational view' mechanism, and not the 'bidirectional shift/cornering effect', thus seems to be supported by the data.

Next, I run Model 7, that includes the interaction effect of political knowledge through ideology, to test empirically hypothesis H6 (knowledge increases scale distortions more for centrist voters). The baseline categories for the interacting variables are 'centre' for ideology and 'low' for political knowledge. The unstandardized main effects for average and high levels of political knowledge are 0.24 and 0.52 (both significant at $p < .001$), which suggests that centrist sophisticated voters do indeed discriminate more among parties than their

unsophisticated equivalents. Compared to this baseline category, ideologically extreme, knowledgeable voters are associated with smaller scale distortions (voters with a high level of political knowledge of the left have a coefficient $\beta_{L,highPK} = -0.15$, of the right $\beta_{R,highPK} = -0.14$; both coefficients are statistically significant at $p < .01$). Thus, hypothesis H6 cannot be disconfirmed.

These results illuminate the double advantage of an informed citizenry. On the one hand, political information increases the ability of ideologically moderate voters to discriminate among party positions. On the other, it moderates the polarizing confrontational mechanism that characterizes more ideologically extreme voters. Thus, the highest values of scale distortions, signalling the dangerous (mis)perception of extreme polarization, are observed for unsophisticated, ideologically extreme voters, whilst the lowest scores, signalling the dangers of perceiving no differentiation among policy packages, are associated with unsophisticated moderate voters.

Finally, we can test the last hypothesis on scale distortion, involving a positive effect of partisanship. Estimates come from Model 8, and are presented in Figure 6.6. Strong partisans, compared to independents, are associated with an increase in the scale distortion of 0.17 ($p < .001$). While the effect is practically and statistically far from insignificant, it also suggests that ideological identification matters more than partisan identity in terms of discrimination ability. Notwithstanding, hypothesis H8 is not disconfirmed.

In conclusion, we now understand that there are various factors affecting the perceptions of party stance. Ideology, in particular, has been shown to systematically shift the perception of party positions, and to interplay with political sophistication to affect the distance metric that voters use to respond to electoral surveys. These distortion idiosyncratic effects are not randomly distributed, and thus systematic bias is the likely outcome, if the problem is not dealt with using appropriate modelling choices. Thus, unless we are able to separate objective positions from subjective perceptions, we will conflate the two things and obtain flawed results.

This has been previously shown in terms of the larger predictive ability of voting preferences for the DIF-corrected ideal points' positions of voters and parties (see section 5.7.4). In the next section I will show that through this bias in party positions, systematic DIF in the form of scale distortions also affects aggregate measures such as polarization indices.

6.5 What do standard polarization indices really measure? (H9–H10)

At this point all considerations stemming from the measurement theory of perceptual data and the empirical investigation of voters' perceptions point towards the presence of systematic error in our measures of party positions. Previous evidence involves: 1) anecdotal cases of clearly wrong party rank-order classifications that lead to correct positions after applying the 2S-BAM procedure to the same data (section 5.5); 2) systematic evidence that 2S-BAM scores reduce within-country distance between expert surveys and standard parties' left-right average perceptions; 3) systematic evidence that 2S-BAM scores are closer to DIF-corrected expert codings of left-right positions than other methods; 4) systematic evidence that DIF-corrected ideal points' positions improve the predictive ability of spatial models of voting; and 5) systematic and theoretically-grounded explanations for the sources of individual distortions in the perception of party positions.

Once all this evidence supporting the presence of systematic measurement error is piled up, the suspicion is also that poor modelling of party positions may be biasing our measures of party system polarization. The question then is: are we measuring true ideological polarization, capturing the objective positions of political parties, or are we looking at something that has more to do with context-specific configurations of the distribution of individual perceptual biases in the electorate? In particular, as the previous sections have highlighted, unequal shares of ideological, partisan and sophisticated voters in the electorates may systematically bias the overall distribution of party positions in the party systems.

To understand whether this is the case, hypotheses H9 and H10 investigate the relationship between scale distortions in the European electorates and two different polarization indices: 1) the standard Dalton index, built using average perceptions of left-right party positions; and 2) a version of the Dalton index constructed with the ideal points of party positions. I test hypothesis H9 with Models 9 and 10, and hypothesis H10 with Model 11s and 12. I use all controls from the previous Model 6 (i.e. all basic controls including ideology and political knowledge, but excluding the interaction effects). Model 9 adds the election-level variable for the (standardized) Dalton index (i.e. the Dalton index computed on raw average party

perceptions). Model 10 also adds the effective number of electoral parties (ENEF) in the party system as a control. Next, Model 11 is in all similar to Model 9, but replaces the standard polarization index with a (standardized) ideal points' version. Finally, Model 12 also adds the ENEF index as an additional control. The same exercise is then duplicated to study the correlation between voters' scale distortions and the polarization in terms of EU integration (for 2009 only) (see appendix I for the two complete regression tables). The next Table 6.2 presents a selection of coefficients from these models.

Table 6.2 — Polarization and scale distortions (H9–H10)

DV: b_{ik}	M10 (I.1)	M12 (I.1)	M10 (I.2)	M12 (I.2)
	Dalton index LR	Dalton index on ideal points LR	Dalton index EU	Dalton index on ideal points EU
	Hypothesis H9	Hypothesis H10	Hypothesis H9	Hypothesis H10
Polarization indices				
$PI_{Dalton,LR}$	0.29*** (0.20 – 0.38)	–	–	–
$PI_{Ideal,LR}$	–	-0.03 (-0.14 – 0.09)	–	–
$PI_{Dalton,EU}$	–	–	0.31*** (0.23 – 0.39)	–
$PI_{Ideal,EU}$	–	–	–	-0.05 (-0.18 – 0.08)
Groups	54	54	27	27
Observations	39,462	39,462	16,748	16,748
R-Squared	0.27	0.27	0.19	0.19
AIC	120,202	120,232	44,102	44,133
ICC	0.129	0.208	0.131	0.130

Note: the table reports a selection of coefficients from tables I.1 and I.2 reported in Appendix I. The dependent variable is the individual scale distortion parameter on the left-right dimension for the two columns on the left (M10 and M12 from Table I.1), and the individual scale distortion parameters on the EU dimension for the two columns on the right (M10 and M12 from Table I.2). Hierarchical linear models with random coefficient at the election-level. Table entries and standardized coefficients with confidence intervals. The models for the second dimension only consider the 2009 European elections. Significance stars: * $p < .05$ ** $p < .01$ *** $p < .001$.

Having already explained voters' scale distortions, we can immediately focus our attention on the polarization predictors. The first table in Appendix I refers to the left-right dimension, and the second table to EU integration. In both cases, as conjectured in the hypotheses, I find

that larger polarization as measured with the standard Dalton indices are significantly associated with larger individual scale distortions. My perception is that this is proof that standard the Dalton index merges two things: it cannot distinguish voters' subjective interpretations of the scales from the true underlying polarization stemming uniquely from the objective positions of political parties on the two dimensions. We are measuring two separate things with the same index.

The coefficients for the standardized Dalton index measure in Model 9 (baseline) and Model 10 (adding the ENEP control) are respectively $\beta_{Dalton,LR} = 0.30$ ($p < .001$), and 0.29 ($p < .001$), virtually unchanged by the inclusion of the ENEP index in Model 10, whose effect is not significant. On the second dimension, the coefficients are respectively $\beta_{Dalton,EU} = 0.28$ ($p < .001$), and 0.31 ($p < .001$).

To obtain an applied sense, these correlations appear stronger in magnitude than individual-level effects such as political knowledge or left-wing ideology on the scale distortions. The direction of the causality in this case is probably reversed: we may expect countries with disproportionately larger shares of highly sophisticated voters to produce greater values on the Dalton index. This effect is obviously independent of objective party positions and the true level of polarization. If this is the case, and if the ideal points truly capture only the latter component, then we should not observe the same correlation in Models 11 and 12. Looking at the table in Appendix I, the coefficients in both models and in both tables are strikingly small and statistically not significant. I read this as evidence that the ideal points are effectively amending the measurement bias stemming from voters' subjectivity in interpreting ideology, and produce a polarization index that is thus independent of the latter construct. Once they are built with ideal points, the polarization indices only measure what they are supposed to measure: a weighted standard deviation of objective party positions in the European party systems.

6.6 The structure of European electoral competition (H11–H13)

We are finally able to test empirically the theoretical model presented in section 2.4. To recap, our goal is to detect the *locus* of electoral competition in contemporary European party systems. Hypothesis 11 deals with the nature of our democracies. To the extent to which

political party positions differentiate the ‘policy products’ sufficiently, and voters are sufficiently open to the competition among political parties, representative democracy can be characterized by a Downsian, responsive, and preference-induced competition. This, in turn, means that greater differentiability on the supply, as measured by the level of polarization, should translate into smaller availability of voters to switch electoral block. On the other hand, if voters are not sufficiently open to competition, European party systems could be Schumpeterian in kind, characterized by preference-shaping competition, and no relationship between the differentiation of the policy packages supplied by parties and the electoral availability of voters.

The theoretical model identified two potential *loci* of electoral competition. According to hypothesis H12, electoral competition is structured along the traditional class cleavage. If this is the case, then we expect party system left-right polarization to be negatively correlated with voters’ availability to switch between a left and a non-left block of parties. Thus, the regression equation to test H12 will be the following:

$$\Pr(\text{ElectAvail}_{i,LR} = 1) = \text{Logit}^{-1}(\beta_0 + \boldsymbol{\beta X} + u_{k,t,[i]});$$

$$u_{k,t} \sim N(\gamma_0 + \gamma_1 PI_{k,t,LR} + \gamma_2 ENEP_{k,t} + \gamma_3 East_k + \gamma_4 Year_t).$$

Where: $\text{ElectAvail}_{i,LR} = 1$ if voter i is electorally available to switch between the left and the non-left block and 0 otherwise⁷¹; $\boldsymbol{\beta X}$ is the set of individual controls; $u_{k,t}$ is an election-level random coefficient; $ENEP_{k,t}$ indicates the Laasko-Tagepeera index of party fragmentation; $East_k$ is an indicator for Eastern European countries; and $Year_t$ is an indicator for the EP election year. The crucial term in the model is represented by $\gamma_1 PI_{k,t,LR}$. In the first place, hypothesis H12 would be falsified if $\gamma_1 \geq 0$. Secondly, as $PI_{k,t,LR}$ indicates the values of the left-right party system polarization in country k and election t , it is vital to consider both the standard DIF-inflated Dalton index ($PI_{Dalton,k,t,LR}$), and the DIF-corrected Dalton index constructed with the party ideal points on the left-right dimension ($PI_{Ideal,k,t,LR}$).

Next, I will apply the previous model to test the second *locus* of electoral competition.

⁷¹ See section 6.2.5 for details on the operationalization of electoral availability.

According to hypothesis H13, electoral competition is shaped by a new integration/demarcation cleavage. Thus, we expect that greater polarization in terms of positions on EU integration will negatively affect the availability of voters to potentially switch between a block of mainstream, and a block of challenger parties. This is tested by the following equation:

$$\Pr(\text{ElectAvail}_{i,MC} = 1) = \text{Logit}^{-1}(\alpha_0 + \alpha X + u_{k,t,[i]})$$

$$u_{k,t} \sim N(\delta_0 + \delta_1 PI_{k,t,EU} + \delta_2 ENEP_{k,t} + \delta_3 East_k + \delta_4 Year_t).$$

Where: $\text{ElectAvail}_{i,MC} = 1$ if voter i is electorally available to switch between the block of mainstream and challenger parties and 0 otherwise, while all other controls are similar to the previous equation for the first dimension. In this case, H13 would be falsified if $\delta_1 \geq 0$. Again, $PI_{k,t,EU}$ will be measured by both the Dalton index computed on the standard average perceptions ($PI_{Dalton,k,t,EU}$), and by the Dalton index applied on the party ideal points' representing the latent position on EU integration on the European Common Space ($PI_{Ideal,k,t,EU}$).

Controls and model specification

All previous hypotheses involved metric dependent variables (i.e. interval-valued). Electoral availability, instead, is a dichotomous condition: either the voter is electorally available, or they are not. Thus, electoral availability requires a link function to map predictions on the [0,1] support. I opt for a logit transformation, and thus the model can be defined as a hierarchical logit regression.

Another choice involves the universe of voters to be considered in the regression model. A wider specification would include all voters, while a narrower specification might reduce the consideration to only voters who are electorally engaged (i.e. those assigning at least *one* high PTV). In fact, electorally available voters are a subset of engaged voters, who are in turn a subset of the entire electorate. While regression models point towards the same substantive conclusions in both specifications, here I will present the more comprehensive and intuitive analyses referring to the entire electorate.

I include all main controls presented so far. Yet, given the greater complexity of model, the aggregate-level covariates, and the logit link function, I recode some controls in order to merge the sparser categories and facilitate model converge: union membership (recoded into two categories: 0 'Not member', i.e. including cases where somebody else in household is member, and 1 Member); religious denomination (0 No denomination, 1 Catholic, 2 Protestant, 3 Orthodox, 4 Other); partisanship (0 'Independent', 1 'Sympathiser', 2 'Close or very close to a party'). Moreover, I add a control to illuminate the social roots of the two hypothesized cleavages, namely respondent's occupation.⁷²

I will present four different model specifications in both the left-right and the mainstream-challengers' cases: 1) a first baseline model with only the individual-level predictors; 2) a model that adds the standard Dalton index of party system polarization to the baseline specification (either referring to the left-right or to the EU integration polarization), together with the other aggregate-level controls; 3) a model that replaces the ideal points' version of the Dalton index; and 4) a model that excludes the 2014 EP elections for the Czech Republic and Luxembourg, due to the fact that the ideal points' measures did not perform sufficiently well for these countries (see section 5.7).

Estimation

I tackle model complexity by estimating a fully Bayesian hierarchical modelling approach.⁷³ Maximum Likelihood estimation of hierarchical Generalized Linear Models can be severely biased if only a small number of countries are available (Stegmueller 2013). I rely on the most efficient sampler to date, the HMC/NUTS sampler: the No-U-Turn Sampler, variant of Hamiltonian Monte Carlo, see (Hoffman and Gelman 2011). I estimate the model using the R interface of Stan (RStan). I run 4 chains for 400 iterations, which are already sufficient to achieve convergence. I use weakly informative priors (Gelman 2006),⁷⁴ which have the advantage of excluding implausible values of the (particularly random-effect) parameters.

⁷² I build a categorical variable adapting Daniel Oesch's (2006) eight-category social class scheme to the EES survey and adding two categories to include voters outside of the formal job market: 1 professionals or technical worker, 2 higher administrative and large employer, 3 clerk, 4 sales or service worker, 5 skilled worker, 6 semi-skilled, unskilled, or farm worker, 7 farm proprietor/manager, 8 student', 9 'never had a job, unemployed or house person, 10 Retired.

⁷³ No finding changes substantively when estimation is performed in a traditional frequentist setting, although convergence proved to be harder to achieve (checks performed with ML-based hierarchical logit models).

⁷⁴ In particular, priors are distributed according to a student-t distribution with 7 degrees of freedom.

This, in turn, helps to regularize the posterior distributions and to stabilize the computation.

MCMC convergence

I check models' convergence using the same convergence tests reported in section 5.2 for all estimated parameters. Thus, for each parameter, density plots show that the values from the four chains overlap and have thus mixed well; traceplots produce a 'white noise' corresponding to evidence of stationarity; and autocorrelation plots show that autocorrelation quickly disappears after the first lags. The Gelman potential scale reduction factor is in every case smaller than 1.1: to illustrate, Figure 6.7 refers to Model 19 (hypothesis 13, testing the effect of $PI_{Ideal,EU}$ on $ElectAvail_{MC}$) and shows with a histogram that the potential reduction factor for all parameters is nearly 1.

Figure 6.7 — Potential scale reduction factors for Model 19

Full model for $ElectAvail_{LR}$

Full model for $ElectAvail_{MC}$

Note: Left panel refers to the third model in Appendix J (DV: $ElectAvail_{LR}$); right panel to the third model in Appendix K (DV: $ElectAvail_{MC}$). Histograms show the distribution of the Rhat scores for all model's parameters (including individual-level parameters, election-level fixed and random effects). In all cases the scores are close to one (the rule of thumb would indicate convergence for $\hat{R} < 1.1$).

Model fit

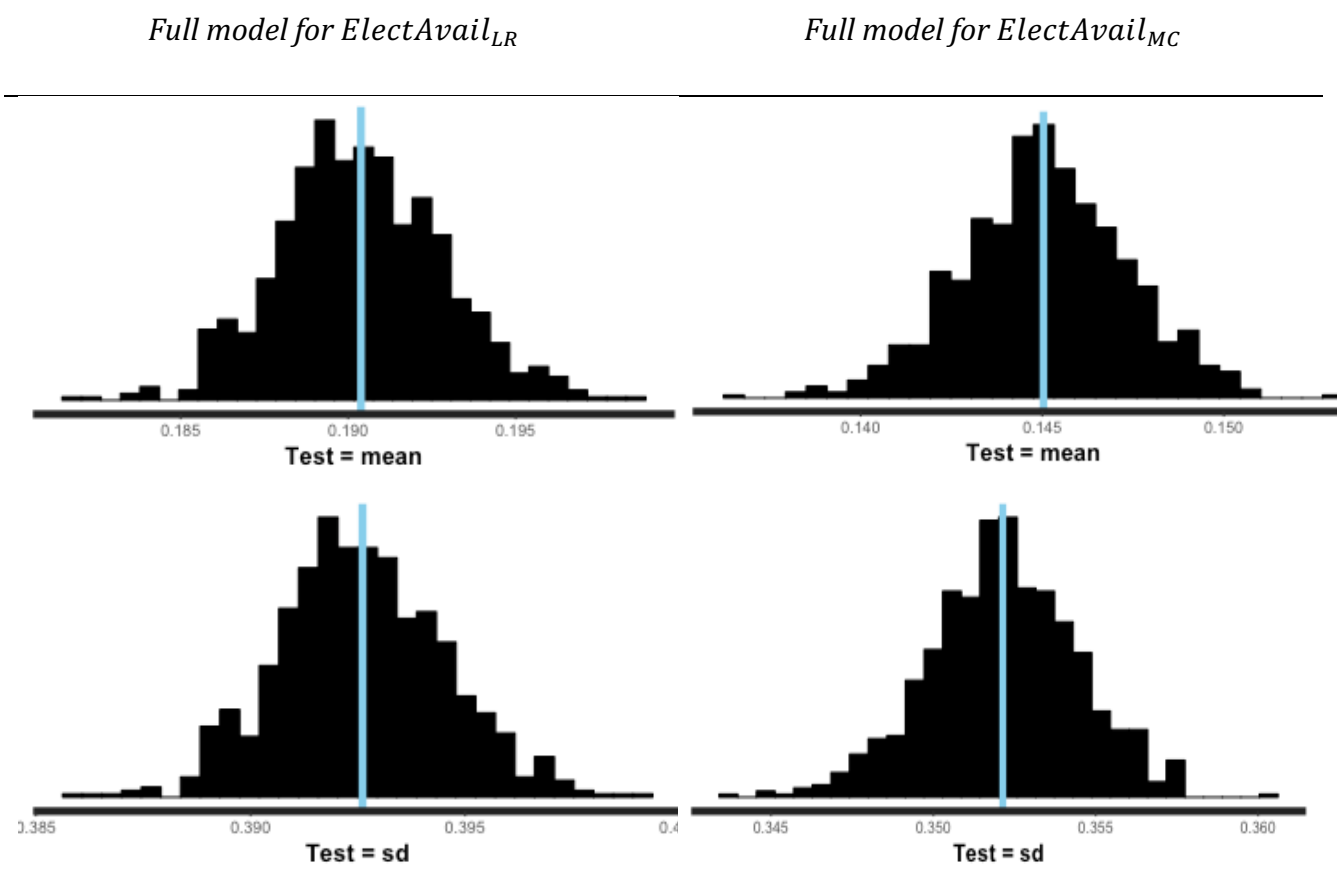
I evaluate the goodness of fit using Posterior Predictive checks. The idea behind PPcheck is that if our model performs well, then we should be able to use the estimated model's

coefficients to reproduce simulated datasets that are similar to the data we observed. The simulated data are produced from the posterior predictive distribution:

$$p(y^{rep}|y) = \int p(y^{rep}|\theta)p(\theta|y) d\theta.$$

Where: y indicates the data and y^{rep} the simulated data, and θ the parameters from the model; thus, for each draw θ from the posterior $p(\theta|y)$, y^{rep} was simulated from the posterior predictive distribution $p(y^{rep}|y)$ ⁷⁵.

Figure 6.8 — Posterior predictive distribution of dependent variables



Notes: Left panel refers to the third model in Appendix J (DV: $ElectAvail_{LR}$), while the right panel refers to the third model in Appendix K (DV: $ElectAvail_{MC}$). Vertical blue line indicates the value for the mean and the standard deviation of the dependent variable observed in the data. Black bins represented the posterior predictive distribution from 200 simulated models, $T(y^{rep})$. The two top histograms report predictive distributions' average outcome, and the histograms underneath report the relative standard deviations.

⁷⁵ Refer to (Gelman 2014 Chapter 6) for additional information.

I generate 200 replicated datasets, and use two test statistics: the share of positive outcomes on the dependent variable $mean(ElectAvail_{MC})$, and its sample standard deviation. The histograms in Figure 6.8 refer to the full models of voters' availability between the left and non-left blocks, and the mainstream and challengers' electoral blocks (respectively reported in the third columns in Appendices J and K).

The PPchecks suggest that the model generates predicted outcomes that are very similar to the observed percentages of electorally available voters. The reader should note the narrow range of the scale: on the left-panel we observe that the vast majority of simulated shares of available voters for left and centre-right blocks are in the range of 18.5 to 19.5%, with the observed share in the middle at 19%. Likewise, between-block availability for mainstream and challenger parties ranges from 14% to 15% for the simulated samples, where the observed share on the original data is 14.5%. Overall, the evidence suggests that the model provides a better than reasonable description of the data.

A short digression: interpreting coefficients without hypothesis testing

As Bayesian methods are not yet widely used in all areas of social science research, the reader might feel uncomfortable without null hypothesis significance testing (e.g. in the form $H_0: \beta \neq 0$). Nevertheless, we should not be afraid to revise and update practices that no longer stand the test of time.

First, classical frequentist testing compares measures of evidence (p – values) and error rates (α 's). These two measures actually represent an “anonymous marriage of convenience” made by applied researchers (Hubbard, Bayarri, Berk and Carlton 2003), between two competing and contradictory approaches: Fisher's idea of inductive inference, on the one hand, and Neyman-Pearson's inductive behaviour approach, on the other. Frequentist significance tests still lack a coherent underlying statistical theory, and in fact p -value was never meant to be used in the way it is used practically today. Second, along this wave of acknowledging the perils of statistical testing, on 7 March 2016 the American Statistical Association released an official ‘Statement on Statistical Significance and P -Values’ (Wasserstein and Lazar 2016) warning against blind reliance on p -values. The wider scientific community has also become more aware of the risks of p -values (Nuzzo 2014). Finally, to falsify hypotheses H12 and H13 we do not need to test whether the effect of

polarization on availability differs from 0. Our primary goal is actually to understand the entire range of parameters that we should not reject: this “range of nonrejectable parameter values is called the Confidence Intervals” (Kruschke 2011, 318).

However, frequentist Confidence Intervals (CI) are not without their own problems, as all the inconsistencies of p -values also apply to CIs. A common misconception with frequentist CI is the distribution of the parameter values between the two endpoints: in fact, the CI is merely represented by the two endpoints and no information is obtained about the most credible region of parameter values. To know which parameter values are more probable, the practice is to impose hypothetical *sampling distributions*, but such a distribution should be applied over samples of data, rather than over parameter values. By contrast, Bayesian posterior Highest Density Intervals (HDI) can be directly interpreted in terms of credibility over the values of the parameters.

Thus, Appendices J and K report respectively the median value and the boundaries of the 90% HDI.⁷⁶ These intervals represent what frequentist intervals are often believed to represent, while in fact they do not: it is valid to formulate statements such that: ‘we believe that the parameter’s value lies with probability p in its $100*p\%$ posterior interval’.

Results: Left-Right structure of electoral competition

Appendix J reports the complete table with the posterior median parameters’ values and the 90% credible intervals for testing hypothesis H12.

In the first model specification (Model 12.1), I only employ individual-level variables. This model specification reveals some features that allow us to trace the profile of voters open to left-right electoral competition. The available voter is more likely to be young, as age categories are monotonically associated with smaller availability, and more likely to be a man, as women are 20% less likely to be open to competition. The most available occupational category is that of retired respondents, while the least available are managers and farm proprietors, although differences among occupational groups are not large. Moreover, availability results are magnified by interest in politics, but depressed by political

⁷⁶ The 90% HDI is often preferred to the standard 95% threshold in Bayesian settings due to the greater computational stability, as the two values of the 95% interval rely on only 2.5% of the posterior simulations.

knowledge. The former effect is likely to percolate through to a smaller number of electorally disengaged voters (i.e. voters whose PTVs are all low, below 6, which in turn are also unavailable) among voters ‘not at all’ interested in politics. Instead, the mechanism underlying the second effect is likely to be the greater ability to reject countervailing information flows that characterize more sophisticated voters. This idea goes back to Zaller’s RAS framework, in which more sophisticated voters are less prone to attitude shift. As easily predicted, partisan voters are less likely to be available than independents. It is more difficult to predict the effect of ideological leanings on availability. I observe an asymmetry, as leftist voters are no less available than centrists, but centre-left voters are more available. Right-wing voters, however, appear more electorally encapsulated than their centrist counterparts.

Table 6.3 — Detail of aggregate-level coefficients from Appendix J (left-right)

DV: $ElectAval_{i,LR}$	Model (14)			Model (15)		
	Posterior Median	CI (lower)	CI (upper)	Posterior Median	CI (lower)	CI (upper)
Macro-level covariates						
Polarization index: $PI_{Dalton,LR}$	-0.23	-0.35	-0.10	-	-	-
Polarization index: $PI_{Ideal,LR}$	-	-	-	0.07	-0.07	0.22
Effective Number of Electoral Parties	0.31	0.20	0.43	0.37	0.24	0.48
Eastern European country (dummy)	-0.37	-0.65	-0.13	-0.34	-0.60	-0.10
Year (dummy)	-0.08	-0.13	-0.03	-0.08	-0.14	-0.03
Observations	43,528			43,528		
Groups	54			54		

Note: table entries are median posterior draws of coefficients with lower and upper bounds of the 90% posterior credible intervals. The complete table is presented in Appendix J. Dependent variable is voters’ left/non-left between-block electoral availability. $PI_{Dalton,LR}$ indicates the standard Dalton computed with raw left-right average perceptions as party positions. $PI_{Ideal,LR}$ indicates the Dalton index computed using left-right 2S-BAM ideal points as measures of party positions. Both polarization indices and the ENEP measure are standardized to allow for direct comparability of coefficients.

Finally, voters unable to position themselves are the least available category, although the mechanism is likely to be the same operating for non-politically motivated voters: a smaller sense of efficacy probably depresses all PTV scores. Following the ‘bipolar Eurosceptic’ expectation, voters opposing the EU integration project, and thus more likely to be supporters of far-right/far-left anti-establishment parties and movements, are also less likely

to be electorally available across left-right blocks, while the supporters of EU integration, and thus supporters of a moderate and mainstream project, turn out to be substantially more available.

Turning to the aggregate-level covariates, I support the reader providing in Table 6.3 the aggregate-level coefficients taken from the second and third models reported in Appendix J. The results are striking: the existence of a substantial relationship between the polarization of supply and the availability of demand on the left-right dimension depends on the index employed. If the standard Dalton index is used, as in Model 14, we find a negative association with electoral availability between the left and the non-left electoral blocks. This would appear to support of the idea that the traditional left-right cleavage may still structure European electoral competition. Yet, when the Dalton index is computed using political parties' DIF-corrected ideal points, the correlation disappears. Having noted that the standard Dalton index captures both objective polarization and subjective distortions, and that the ideal points' version does not correlate with the latter, the suspicion is that the negative correlation in Model (14) could have been spuriously induced by voters' subjective distortions of left-right space.

I conclude this subsection by noting that the coefficient for the effective number of parties signals how voters are more available in multiparty systems, and that availability is lower in Eastern European countries, but has grown between the 2009 and the 2014 EP elections. Results also hold for the fourth specification (Model 16), where I omit the 2014 Luxembourg and the Czech Republic cases, since they did not perform well in the validation tests.

Results: integration-demarcation structure of electoral competition

Appendix K presents the median posterior draws from the four models analysing voters' electoral availability between the two blocks of mainstream and challengers' parties. As previously, Model 17 estimates the effects of individual-level covariates only; Model 18 adds the standard Dalton index computed on the average perceived positions of political parties' stance on the EU integration; Model 19 measures polarization on the EU dimension computing the Dalton index on the ideal points' on the European Common Space; Model 20 reproduces Model 19 omitting Luxembourg and the Czech Republic for 2014.

Looking at individual predictors, voters' availability appears to shrink with the age of

respondents, signalling that young voters are also the most likely to switch from/to anti-establishment parties. Compared to a respondent in the 18–25 age cohorts, a voter over the age of 66 is 76% less likely to be electorally available. However, it is striking that the previously positive correlations with education and subjective social class have now become negative. I read this as the signal that least educated and working-class voters are the most electorally open to anti-establishment parties. This finding further fits well with the theoretical framework, where less mobile and skilled workers are expected to translate their need of social protection in a vote for a party supporting the retreat into nation states. Moreover, the previous finding that availability increases in voters' interest in politics, while decreasing in political knowledge is also confirmed for this second dimension of electoral competition ($\beta_{Pollnt=very} = 0.32, \beta_{PolKnow=high} = -0.33$).

A striking finding is that, differently from the case of the left-right between-block availability, partisans do *not* appear to be more likely than independents to switch the vote on the second dimension. I advance one reasonable explanation for this finding: partisan supporters of mainstream parties may not oppose challenger parties on the same ideological side. This explains why we observe that being a partisan supporter e.g. of a conservative party decreases the probability to vote for a party of the centre-left compared to an independent voter, whilst at the same time this does not depress the probability to vote for anti-establishment far right party. This explanation seems to suggest a potential strategic advantage of anti-establishment parties, as it appears that they can more easily enlarge their pool of supporters even among other (mainstream) party supporters.

In terms of aggregate-level covariates, Table 6.4 reports a subset of coefficients from Appendix K (Models 18 and 19). The most astonishing finding appears when we look at the effect of party system polarization of EU integration on voters' availability. The standard Dalton index would suggest the absence of a systematic relationship between polarization and availability. The coefficient ($\beta_{Dalton,EU} = 0.10$) suggests that the most credible effect value is slightly *positive*, although the interval of the 90% most plausible values includes the zero effect so the absence of an effect is quite credible as well. Therefore, overall, the evidence produced by the standard Dalton index (negative relationship between left-right polarization and between-block availability and no systematic relationship on the second dimension) would suggest that the *locus* of contemporary electoral competition in Europe is still

organized around the classic left-right dimension. Remarkably, when we replace the DIF-inflated Dalton index with the Dalton index computed using DIF-corrected ideal points, we obtain a strong negative effect of EU polarization on between-block availability ($\beta_{Ideal,EU} = -0.50$).

Table 6.4 — Detail of aggregate-level coefficients from Appendix K (EU integration)

DV: <i>ElectAval</i> _{<i>i,MC</i>} Coefficient	Model (18)			Model (19)		
	Posterior Median	CI (lower)	CI (upper)	Posterior Median	CI (lower)	CI (upper)
Macro-level covariates						
Polarization index: $PI_{Dalton,EU}$	0.10	-0.14	0.42	-	-	-
Polarization index: $PI_{Ideal,EU}$	-	-	-	-0.50	-0.74	-0.30
Effective Number of Electoral Parties	0.45	0.20	0.71	0.58	0.38	0.75
Eastern European country (dummy)	-0.40	-0.83	0.08	-0.08	-0.48	0.32
Year (dummy)	-0.07	-0.15	0.01	-0.10	-0.17	-0.02
Observations	43,528			43,528		
Groups	54			54		

Note: table entries are median posterior draws of coefficients with lower and upper bounds of the 90% posterior credible intervals. The complete table is presented in Appendix K. Dependent variable is voters' mainstream/anti-establishment between-block electoral availability. $PI_{Dalton,EU}$ indicates the standard Dalton computed with raw EU integration average perceptions as party positions. $PI_{Ideal,EU}$ indicates the Dalton index computed using EU integration 2S-BAM ideal points as measures of party positions. Both polarization indices and the ENEP measure are standardized to allow for direct comparability of coefficients.

This coefficient points to a strong, substantial effect of polarization that is similar in magnitude to the strongest individual predictors. Therefore, if we jointly consider the two tested structures of electoral competition, the ideal points' Dalton index appears to point in the opposite direction to the standard index, supporting the view that the integration/demarcation dimension is currently structuring European politics.

In conclusion, hypothesis H11 is not falsified in either case, as both measures have indeed detected a structural link between the decidability of the supply-side and the availability of demand. This link is substantial, and in both cases the magnitude of the relationship is comparable to strong individual predictors such as interest in politics and political knowledge. Thus, it is the Downsian-type of democracy and not the Schumpeterian one that seems to provide a better description of current European party systems. Nevertheless, our

findings point towards two radically different accounts of the *locus* of electoral competition: when the standard Dalton index is used as a measure of polarization, then H12 (left-right structures electoral competition) is not falsified and hypothesis H13 (electoral competition structured along the integration/demarcation cleavage) is falsified. When the ideal points' version is adopted, the opposite conclusion is reached.

Robustness checks

I have made a number of variations to the models in order to exclude that these findings are related to arbitrary operationalization decisions, or other statistical and measurement configurations unrelated with the substantive findings. One potential problem has already been identified with what appeared as the most problematic estimates for the party ideal points (Luxembourg and the Czech Republic 2014) that were already excluded in the fourth model specification without causing any sizeable change in the models' coefficients. Yet, there were a number of additional factors that could be checked.

First, I want to exclude that the arbitrary threshold of $PTV \geq 7$ for classifying voters as electorally available, had any influence on the results. The value of at least 7 is in fact an arbitrary choice, guided by the need to include all vote preferences high enough, i.e. that make the voter potentially available to vote for that political block. We may argue that a threshold of $PTV \geq 6$ should also do the job. Moreover, this would correspond to a vote preference that is just a little over half the scale, thus corresponding to a 'psychological threshold' indicating a positive predisposition. Thus, I have re-computed the two dependent variables $ElectAvail_{i,LR}$ and $ElectAvail_{i,MC}$ considering this value as the availability threshold and then re-estimated the main specifications (Models 14 and 15, with the standard and ideal points' versions of the left-right Dalton index; and Models 18 and 19, with the standard and ideal points' versions of the EU integration Dalton index) with the only difference being the new dependent variables. I estimate the coefficients in simple frequentist setting, with a multilevel logit model (*glmer()* function from the *lmer4* R package). The following table 6.5 reports the key parameters for the left-right between-block availability and the following table 6.6 for refers to the mainstream-antiestablishment party competition.

Table 6.5 — Robustness test: different threshold for electoral availability (LR)

DV: $ElectAval_{i,LR}$	Model (1)		Model (2)	
	b	se	b	se
Macro-level covariates				
Polarization index: $PI_{Dalton,LR}$	-0.241***	0.066		
Polarization index: $PI_{Ideal,LR}$			0.062	0.077
Effective Number of Electoral Parties	0.301***	0.065	0.351***	0.071
Eastern European country (dummy)	-0.449***	0.128	-0.421**	0.142
Year (dummy)	-0.062*	0.026	-0.069*	0.031
Observations	40,298		40,298	
Groups	54		54	
AIC	43,758		43,769	
BIC	44,231		44,243	

Note: The model specification is identical to previous model for left-right between block electoral availability (Table 6.2, full model in Appendix J). The only difference is that the dependent variable left-right between-block availability is build using the value of 6 as availability threshold. Both polarization indices and the ENEP measure are standardized to allow for direct comparability of coefficients. Significance stars: * $p < .05$; ** $p < .01$; *** $p < .001$.

Table 6.6 — Robustness test: different threshold for electoral availability (MC)

DV: $ElectAval_{i,MC}$	Model (1)		Model (2)	
	b	se	b	se
Macro-level covariates				
Polarization index: $PI_{Dalton,EU}$	0.057	0.156		
Polarization index: $PI_{Ideal,EU}$			-0.511***	0.144
Effective Number of Electoral Parties	0.478**	0.146	0.593***	0.121
Eastern European country (dummy)	-0.478	0.282	-0.102	0.264
Year (dummy)	-0.047	0.051	-0.065	0.046
Observations	44,781		44,781	
Groups	54		54	
AIC	41,638		41,625	
BIC	42,125		42,113	

Note: The model specification is identical to previous model for left-right between block electoral availability (Table 6.3, full model in Appendix K). The only difference is that the dependent variable mainstream-antiestablishment between-block availability is build using the value of 6 as availability threshold. Both polarization indices and the ENEP measure are standardized to allow for direct comparability of coefficients. Significance stars: * $p < .1$; ** $p < .05$; *** $p < .01$.

The results are unchanged: on the left-right dimension, the effect of the standard Dalton index gave $\beta_{Dalton,LR} = -0.24$; $p < 0.01$, while the effect of the ideal points' version is $\beta_{Ideal,LR} =$

-0.06 ; $p = 0.42$. On the EU integration dimension the two coefficients are respectively: $\beta_{Dalton,EU} = 0.06$; $p = 0.71$, and $\beta_{Ideal,EU} = -0.51$; $p < 0.01$.

Second, I wanted to exclude that the results were driven by the choice of the Dalton index as measure of polarization. In the light of the discussion in Chapter 3, another (ostensibly suboptimal) alternative could have been a simpler distance among the positions of two non-irrelevant most radical political parties in the party system. We had previously avoided this indicator because it would not consider the positions of all the other parties positioned between the two extremes. This simpler indicator can now be used as a sound robustness check to exclude that some peculiarity of the Dalton index is actually driving the results. Therefore, I compute the positional distance between the two most extreme political parties that received at least 7% of the popular vote⁷⁷ on both dimensions and repeat the estimation. A selection of the most important estimates is presented in table 6.7 (left-right availability) and 6.8 (mainstream-antiestablishment availability).

Table 6.7 — Robustness test: different polarization measure (LR)

DV: <i>ElectAval</i> _{i,LR}	Model (1)		Model (2)	
	b	se	b	se
Macro-level covariates				
Polarization index: $PI_{Dist,LR}$	-0.209**	0.071		
Polarization index: $PI_{Ideal.Dist,LR}$			0.138	0.079
Effective Number of Electoral Parties	0.339***	0.069	0.330***	0.075
Eastern European country (dummy)	-0.287*	0.141	-0.368*	0.146
Year (dummy)	-0.076**	0.028	-0.073*	0.031
Observations	43,528		43,528	
Groups	54		54	
AIC	39,083		39,088	
BIC	39,534		39,539	

Note: The model specification is identical to previous model for left-right between block electoral availability (Table 6.2, full model in Appendix J). The only difference is that the polarization index is no longer the Dalton (2008) index but it is the distance between the two most ideologically extreme parties that have received at least 7% of the popular vote at the previous elections. Both polarization indices and the ENEP measure are standardized to allow for direct comparability of coefficients. Significance stars: * $p < .5$; ** $p < .01$; *** $p < .001$.

⁷⁷ The threshold was chosen to include only electorally relevant actors. A threshold of 10% would be too high, and would exclude some well-known anti-establishment parties, a threshold of 5% did not affect the findings.

Table 6.8 — Robustness test: different polarization measure (MC)

DV: <i>ElectAval</i> _{<i>i,MC</i>}	Model (1)		Model (2)	
	b	se	b	se
Macro-level covariates				
Polarization index: $PI_{Dist,EU}$	0.190	0.135		
Polarization index: $PI_{Ideal.Dist,EU}$			-0.472***	0.130
Effective Number of Electoral Parties	0.384**	0.130	0.602***	0.112
Eastern European country (dummy)	-0.347	0.243	-0.048	0.242
Year (dummy)	-0.071	0.045	-0.088**	0.042
Observations	43,528		43,528	
Groups	54		54	
AIC	39,083		39,088	
BIC	39,534		39,539	

Note: The model specification is identical to previous model for mainstream-antiestablishment between block electoral availability (Table 6.3, full model in Appendix K). The only difference is that the polarization index is no longer the Dalton (2008) index but it is the distance between the two most ideologically extreme parties that have received at least 7% of the popular vote at the previous elections. Both polarization indices and the ENEP measure are standardized to allow for direct comparability of coefficients. Significance stars: * $p < .5$; ** $p < .01$; *** $p < .001$.

The change in the polarization measure did not affect the results: on left-right placement, the coefficients for the differences in the average perceptions and in the ideal points respectively were the following⁷⁸: $\beta_{Dist,LR} = -0.21$ ($p < 0.01$), $\beta_{Ideal Dist,LR} = 0.14$ ($p = 0.08$). On the EU integration dimension the same coefficients were $\beta_{Dist,EU} = 0.19$ ($p = 0.16$), $\beta_{Ideal Dist,EU} = -0.47$ ($p < 0.001$).

While the substantive findings remain unchanged, this specification provides additional food for thought: the effect of $\beta_{Ideal Dist,LR}$ is close to being significantly *positive*. This possibility is not even considered in the widely reviewed theoretical discussions (e.g. Bartolini 2002). Yet, the impression is that, in the present configuration of European party systems, this should no longer be such a paradox or a taboo: larger polarization on the *secondary* dimension (i.e. the left-right) may lead to *larger* between-block availability. Let us consider that empirically very high levels of left-right polarization occur when the ideologically extreme political

⁷⁸ I estimate this robustness checks relying on frequentist MLE estimates (multilevel logit model). See below for detail.

actors are also extreme on the EU integration dimension. If this is true, and if the EU is currently driving electoral competition, then large ideological polarization, *through* the even more salient EU polarization, may actually lead voters to increase the availability to vote for the ‘old’ ideological adversaries. For a practical illustration of such a configuration, consider the problem of a French socialist voter who, in the next French presidential elections, is likely to face the decision between voting for the far-right Eurosceptic candidate, and the ‘traditional’ right-wing pro-market candidate: notwithstanding the distance on the traditional left-right dimension, polarization on the EU dimension would actually increase the availability of socialist voters to vote for right-wing candidates. Nevertheless, our empirical findings have not yet given rise to this positive relationship, which I mention as a theoretical exercise.

Table 6.9 — Robustness test: ML estimation (LR)

DV: $ElectAval_{i,LR}$	Model (1)		Model (2)	
	b	se	b	se
Macro-level covariates				
Polarization index: $PI_{Dalton,LR}$	-0.231***	0.070		
Polarization index: $PI_{Ideal,LR}$			0.066	0.080
Effective Number of Electoral Parties	0.306***	0.069	0.353***	0.073
Eastern European country (dummy)	-0.369**	0.138	-0.340*	0.147
Year (dummy)	-0.072*	0.028	-0.078*	0.032
Observations	43,528		43,528	
Groups	54		54	
AIC	36,117		36,127	
BIC	36,554		36,564	

Note: The model specification is identical to previous model for left-right between block electoral availability (Table 6.2, full model in Appendix J). The difference is that the model is now estimated in frequentist setting, with a Maximum Likelihood hierarchical Logit model. Both polarization indices and the ENEP measure are standardized to allow for direct comparability of coefficients. Significance stars: * $p < .05$; ** $p < .01$; *** $p < .001$.

Finally, it would also be interesting to see whether the main model specifications would have passed the conventional frequentist statistical tests. This can be taken as a test of robustness, in that I show that results are not driven by the Bayesian estimation framework. Table 6.9 and 6.7 thus present results from the main specifications re-estimated with a standard

hierarchical logit model with election-specific random intercepts. The results are once again unchanged, and clarify that the models would have passed conventional statistical significance tests: on the left-right placement, the coefficients for the differences in average perceptions and ideal points were as follows: $\beta_{Dalton,LR} = -0.23$; $p < 0.01$, $\beta_{Ideal,LR} = 0.07$; $p = 0.41$. On the EU integration dimension the same coefficients were $\beta_{Dalton,EU} = 0.10$; $p = 0.46$, $\beta_{Ideal,EU} = -0.49$; $p < 0.001$.

Table 6.10 — Robustness test: ML estimation (MC)

DV: <i>ElectAval</i> _{<i>i,MC</i>}	Model (1)		Model (2)	
	b	se	b	se
Macro-level covariates				
Polarization index: $PI_{Dalton,EU}$	0.102	0.139		
Polarization index: $PI_{Ideal,EU}$			-0.487***	0.131
Effective Number of Electoral Parties	0.430**	0.130	0.562***	0.108
Eastern European country (dummy)	-0.392	0.252	-0.071	0.235
Year (dummy)	-0.070	0.046	-0.089*	0.042
Observations	43,528		43,528	
Groups	54		54	
AIC	33,205		33,191	
BIC	33,657		33,643	

Note: The model specification is identical to previous model for left-right between block electoral availability (Table 6.3, full model in Appendix K). The difference is that the model is now estimated in frequentist setting, with a Maximum Likelihood hierarchical Logit model. Both polarization indices and the ENEP measure are standardized to allow for direct comparability of coefficients. Significance stars: * $p < .1$; ** $p < .05$; *** $p < .01$.

The bias induces by ML estimation has been document in (Stegmueller 2013) and recalled previously in this chapter, and this is the reason why I still present the Bayesian estimates as first evidence.

This table concludes the empirical analysis. The next, and final, chapter will elaborate more on what these findings actually tell us about contemporary electoral competition in Europe.

Chapter 7 — A spectre is haunting Europe

The dividing line between progressive and reactionary parties no longer follows the formal line of greater or lesser democracy, or of more or less socialism to be instituted; rather the division falls along the line, very new and substantial, that separates the party members into two groups. The first is made up of those who conceive the essential purpose and goal of struggle as the ancient one, that is, the conquest of national political power – and who, although involuntarily, play into the hands of reactionary forces, letting the incandescent lava of popular passions set in the old moulds, and thus allowing old absurdities to arise once again. The second are those who see the creation of a solid international State as the main purpose; they will direct popular forces toward this goal, and, having won national power, will use it first and foremost as an instrument for achieving international unity.

Altiero Spinelli and Ernesto Rossi (1947).
The Ventotene Manifesto.

7.1 A short summary of the main findings

In the light of the two empirical chapters, we can finally draw some conclusions and recap on the most salient aspects of this work from the broader perspective of the consequences of all previous findings.

In the first place, the impression that arises throughout the empirical analyses is that standard survey measures produce biased positions of voters and political actors. As political researchers we should no longer behave as if we were natural scientists, and embrace in our models the idea that the reality we study is a *social* reality, a mixture of objective phenomena and subjective interpretations: if we are interested in the former, we need to identify the latter. In the previous chapter I showed that the subjectivity of interpretation can also expand our knowledge, as it can be systematically explained. Ideology is not just indicating a policy position, but represents a powerful lens that actively colours political perceptions (section 6.3). Thus, we can find that many of those self-reported centrist voters are actually illusory centrists, with a certain degree of latent ideological leaning. When these perceptual distortions are explicitly taken into account in the empirical models, and their confounding

effect which contaminates our measures is separated, then the validity of the spatial voting proposition appears to be magnified (see section 5.7.4). Left-wing (right-wing) voters appeared to systematically perceive political objects as more conservative (progressive) than they objectively are (see hypothesis H2, and section 6.3). This kind of ideological rationalization seems to be particularly active for voters who are more motivated in political reasoning (H3) and for right-wing partisan voters (H4). Overall, the main ideas presented in the theoretical framework, suggesting that the mechanisms of ingroup favouritism, outgroup negativity, and a pro-moderation bias may be actively shaping voters' perceptions, seem to be confirmed. Moreover, more politically knowledgeable voters are better able to discriminate among party positions (H5; see section 6.4). Furthermore, ideologically extreme voters appear to perceive the political system as more polarized than it objectively is (evidence supported H7b, disconfirming H7a). Most importantly, the empirical analysis reveals the vital importance of neutral political information and of an informed citizenry. On the one hand, knowledgeable ideologically moderate voters are better able to discriminate among party positions than non-knowledgeable moderates (i.e. increasing the visibility of differing policy packages). On the other hand, the polarizing perceptual mechanism, active for ideologically extreme voters, appears to be moderated by political knowledge (H6). Finally, it appears that partisan voters also perceive wider distances among political parties (H8).

In the second place, we must be aware that the measurement error stemming from perceptual distortions percolates through to perceptual measures of party positions. This means that aggregate-level party system measures relying on perceptual data to produce the positions of political parties are conflating two different constructs: objective party positions and subjective perceptions. High polarization is actually strongly associated with large (scale) perceptual distortions (section 6.6, H9). If we merge this finding with the previous analysis of perceptual distortions, it generates the strong suspicion that, for the same objective party positions, differing contingent configurations of ideological, partisan and knowledgeable voters lead to spuriously different levels of polarization. In fact, these factors are shown not to correlate with polarization measures constructed with DIF-corrected party positions (H10).

Finally, these objective measures of political polarization can be used to study the current structure of electoral competition (section 6.6). The novel research design I propose (see section 2.3) looks for a negative correlation between differentiability of the supply (operationalized through polarization indices) and the between-block availability of the demand. In the eyes of the researcher who overlooks the effect of perceptual distortions, and thus opts for standard measures of polarization such as the Dalton index build with DIF-inflated measures of party positions, the design suggests that electoral competition is still structured along the traditional left-right dimension. This would be a great mistake: in fact, when the polarization indices are computed using objective party positions, it becomes clear that a new integration/demarcation dimension is actively structuring European politics (H11–H13). In both cases, evidence is provided in favour of a Downsian/responsive, rather than Schumpeterian, kind of electoral competition.

7.2 What can we infer on national representation from EP data?

One may argue that the political game in the European political arena is not necessarily played according to the rules of national electoral contexts. In other words, are the findings produced with EP data generalizable to electoral competition in national parliaments? I justify the adoption of EP data mainly on the basis of their availability: to my best knowledge, there is no comparative dataset based on general elections containing reported perceptions of party positions on the two political dimensions that are considered in this thesis. Therefore, a word of caution should be introduced on this issue, as it is reasonable to argue that the integration-demarcation cleavage may play greater role in the EP elections compared to NP elections. It is also reasonable to think that considerations based on the EU integration dimension of party competition would be more ‘on top of the head’ — borrowing Zaller’s famous expression — to the voters during the EP campaigns. This said, three considerations can provide more solid justification to my decision to proceed with EP data and also offer additional insight on this issue.

First, it should be observed that the type of electoral arena (i.e. EP or NPs) should not dramatically affect the dependent variable, i.e. voters’ between-block electoral availability. In fact, we can expect strategic considerations to increase the electoral success of niche and

radical parties in EP elections due to the smaller interest at stake. Whereas this generally implies larger protest vote in EP compared to NP elections, electoral availability is built using Propensities to Vote measures, which represent potential utilities rather than actual party choice. Yet, the protest vote is generally cast for parties that are already attractive, even if they would not be voted when the interest at stake is substantial, as in general elections. In other words, the 'protest' affects the choice, not the underlying electoral utilities: voters protest casting the vote for a more radical party for whom their reported propensity to vote already high.

Second, recent empirical evidence shows that the role played by the attitudes towards the EU integration on the vote choice is similar for the two electoral arenas (EP and NPs). In particular, de Vries and Hobolt (2016) compare the impact of the distance between voters and parties in terms of the attitudes towards the EU on both the EP and the NP vote choice, showing that: "in eighteen out of twenty-eight systems, EU issue distance has a negative and statistically significant effect on vote choice in EP elections. In the same eighteen nations, we also found evidence of EU issue voting in NP elections. The empirical findings thus demonstrate that in most EU member states, voters translate their attitudes regarding European integration into vote choice and do so in both channels of representation." (de Vries and Hobolt 2016, p. 112). Therefore, the role played by EU integration seems not to be radically different between EP and NP elections, *even if* we consider vote choice and not PTVs. Finally, a differentiation of the structure of electoral competition, as depending on the electoral arena, runs against the common wisdom, as the theory of 'second-order' elections (Reif and Schmitt 1980; Schmitt 2005; Schmitt and Teperoglou 2015) would predict EP elections as reflecting 'first-order' NP elections. If we accept the substantial evidence supporting this theoretical account, then we ask ourselves: should we read the detected restructuring in European electoral competition (with EP data) as the 'emancipation' of the European arena from first-order considerations, or should this evidence point towards a more general restructuring involving both EP and NPs? The former perspective leads to the conclusion that the politicization of Europe (Hutter and Grande 2016; Kriesi 2016) has transformed second-order elections into first-order elections, creating a potential mismatch in the underlying dimensions of the two political arenas (i.e. left-right structuring NP elections, integration-demarcation the EP elections). By contrast, the latter perspective

suggests that the restructuring detected with EP data would be observed also with NPs election data. If this is the case, then my findings would be the signal of a more general Europeanization of national political arenas. In both cases, the observed restructuring is loaded with potential consequences for European politics. However, if we assess these two perspectives in the light of the previous findings from de Vries and Hobolt (2016), showing that the role played by EU integration appears to be similar in EP and NPs vote choice, then one can speculate that it is likely the case that the restructuring I described with EP elections represents a general restructuring that we should also observe for NP elections, although additional analyses are required to confirm this expectation.

7.3 The forking path of measurement

The empirical analyses presented in section 6.6 have produced polar-opposite results depending on the choice of the polarization indicator. Such a clear-cut difference — between the standard measure built with raw average perceptions and the measure built with ideal points estimated through the 2S-BAM procedure — follows a strong theoretical expectation regarding the inadequacy of average perceptions. The intuition that this choice would have proved empirically crucial is to some extent what motivated the decision to undertake such a demanding and challenging research design in the first place.

The intuition that individual distortions may have been correlated with the level of polarization was firstly introduced in Hare et al. (2015, p. 8), commenting on the findings from the application of ideal point estimation to the case of the United States:

Both distributions of Bayesian A-M ideal point estimates—all respondents and only those with positive weights—exhibit greater polarization than the raw self-placement data. [...] The ideological center appears to hollow out once we account for DIF. [...] Across all years, the overlap between party identifiers (with leaners) and voters of the Democratic/Republican presidential candidates is greater according to raw liberalconservative self-placements than the Bayesian A-M ideal point estimates. That is, after accounting for DIF using Bayesian A-M scaling, voters are more polarized (less overlap) than when using raw self-placement data. (Hare et al. 2015, p. 8).

This idea was clearly formulated on the basis of a single case study, and it was not possible to predict the consequences of the new measurement approach in a large comparative

setting. Nevertheless, the account generated by the empirical findings in Chapter 6 has been pursued bearing in mind that measurement error was potentially systematically biasing our measures of polarization. This led me to develop the first three blocks of hypotheses (H1–H4 on latent shifts, H5–H8 on latent scale distortions, and especially to H9 and H10 on the bias of the polarization index when applied on naïve raw average perceptions). In the last instance, the question is now reduced to a simple choice: should we follow the simple path of equalling voters' positions and their reported perceptions, or should we follow the most difficult route that implies a long and challenging methodological detour? At the end of this journey, two main arguments make me select the second option.

First, the sound deductive theoretical framework. The intuition that voters develop, as a product of their own experiences and of the social context they are embedded into, a subjective understanding of complex multidimensional concepts grounds on the ideas of social cognition research and classical epistemological and philosophical accounts of the relationship between the two pillars of social reality: subjectivity of perception and objective reality. It is my conviction that we cannot fully appreciate political phenomena unless we are able to distinguish between the two. In the past we could not disentangle these two aspects due to technical and methodological limitations. Today, thanks to recent advances in latent variable modelling and the rapid expansion of computing power and storage capacity, strong simplifications that have long represented the only feasible choice can be relaxed or even avoided. The scaling approach to perceptual data comes with a twofold advantage. On the one hand, it broadens our knowledge of voters by explicitly estimating the latent components forming their perceptions. In other words, it enables researchers to finally understand how voters perceive the political world. On the other hand, by separating the subjective component of judgment, let us rediscover a purified objective reality. Second, alongside the coherent framework of measurement theory, also the substantial amount of supportive evidence collected in the validation section make me propend for the soundness of the scaling approach. Not only did the ideal points pass the validation tests, but they substantially improved our voting prediction models. In addition, this produced new data (latent distortion parameters) later used to formulate hypotheses to discover new empirical regularities. In sum, I identify at least four key advantages in using the 2S-BAM procedure proposed in this thesis. The model has produced: 1) better measures of party positions; 2) a

substantial improvement in the explanatory ability of voting propensities, lending to greater support for the spatial voting hypothesis; 3) new individual-level parameters that can be used to test hypotheses on voters' political perceptions; and 4) polarization measures that are uncorrelated with these latent parameters, and thus uniquely related to objective positions of political parties. All in all, if we omit the sheer effort required to pursue such an approach, I can see many advantages, but no valid drawbacks in accepting the scaling approach, as well as of the conclusions that can be drawn from the empirical findings it produced.

7.4 A post-liberal democracy arising from the reaction of the nations

In conclusion, I accept the possibility that methodological confusion together with voters' sizeable and systematic perceptual heterogeneity may lead us to severely underestimate the idea of a continental-wide restructuring of the electoral competition on the wake of the Great Recession.

The restructuring of European party systems along the contestation of European Union integration arises from the enlargement and deepening of the European Union project. European integration — particularly after the Maastricht Treaty, with a boost after the 2007–2009 Euro-crisis, the consequent deflationary policy reaction, and the refugees' crisis — has reached the threshold triggering an organized process of opposition. Thus, the new structure of European electoral competition rests on this trend of politicization of the European project. In the words of Maag and Kriesi (2016, p. 208):

[H]igher levels of politicization facilitate the process of structuring. This expectation follows from our notion that politicization builds on a potential provided by fundamental conflicts about European integration. Politicization is the translation of these conflicts into political action. [...] Politicization — especially its polarization dimension — can be considered as a necessary condition for structuring. (Maag and Kriesi 2016, p. 208)

European party systems no longer appear to be organized along the traditional left-right dimension rooted in the traditional class cleavage. Instead they appear to be organized around the confrontation between two opposite poles: on the one hand, the supporters of larger and deeper international ties and — especially — of the institutional and policy constraints these ties imply, such as further reduction of trade restrictions and the project of

a federal EU, that would push further economic and political forms of international integration, compress national sovereignty and exacerbate the crisis of nation states; and on the other hand, those who oppose the twilight of the nations, and are willing to revive and strengthen — some for economic reasons, others on cultural grounds — boundaries and national custom tariffs. The retreat into the nation is dictated by the inability to escape the erosion of living standards by the social groups that represent the most vulnerable production factors: unskilled and replaceable manual workers who are often unable to emigrate in the same way as intellectual and socio-cultural employees, and who are threatened by competition from unskilled immigrants; and small landowners who cannot relocate their activities in the same way as big capital.

In section 2.4 I propose a theory of structural change in electoral competition that is based primarily on economic conflicts, and represented with David Ricardo's classic production function:

$$Y = f(L, K, N, S).$$

I defined the 'physiological' stage of the economic system as a context of cyclical expansion and contractions of the product, with an overall long-term trend of economic growth ($\uparrow Y$) that is enough to satisfy the most pressing societal demands and to contain the most radical consequences of social conflict. In this stage, as explained in the theoretical model, the key conflict structuring electoral competition is between the two larger production factors (capital and labour) that fight to gain larger shares of profits and wages. When a prolonged, systemic crisis hits the economy and flips the future expectations of the weakest social groups ($\downarrow Y$), or when a condition of extreme inequality substantially prevents the masses from obtaining a larger share of the product, then the nature of the electoral conflict may well be transformed: this is no longer a confrontation over the maximization of shares of additional product since it now involves the minimization of losses. In this 'pathological' stage, the conflict is between immobile and replaceable productive factors (labour and land) and the mobile and non-replaceable ones (capital and know how/expertise): while the latter can escape, through dislocations and the brain drain, the former cannot and their only chance is to struggle not to pay the costs (in the shape of stagnating wages and growing unemployment).

Against this backdrop, the left opposes Europe for its neoliberal character, and this leads to an attempt to conjugate the new conflict in terms of class conflict, with the goal of decommodification through a refounding of Europe on social grounds. The right, on the other hand, opposes Europe because of its inherently internationalist/cosmopolitan character that threatens national identities, communities and boundaries. Therefore, the attempt of the nationalist Eurosceptic front is to frame this opposition in terms of an identity and sovereignty conflict, with the goal of ending the European experience and the refounding of sovereign nations on the basis of national identities and communities.

My argument is not that Europe has already undertaken a realignment of political coalitions (e.g. 1896 and 1932 in the United States). A realignment refers to a long-term change in political coalitions, a “substitution of one conflict for another” (Schattschneider 1975, p. 80). While it is too early to support such a conjecture, my claim is that a window of opportunity has opened. European party systems find themselves in a political configuration that can potentially generate new alliances and dramatic policy reversals. For example, let us take the election of Franklin Roosevelt in 1932: before the election, the Democratic Party’s discourse focused on defending the rights of the States from the ‘usurpation’, supported by the Republican Party, of the enlargement of the powers of the Federal Government. This was one of the pre-Roosevelt discourses prevailing in American politics. The opening of the 1912 Democratic Platform states:

We declare it to be a fundamental principle of the Democratic party that the Federal government, under the Constitution, has no right or power to impose or collect tariff duties, except for the purpose of revenue, and we demand that the collection of such taxes shall be limited to the necessities of government honestly and economically administered.

The realignment brought by Roosevelt’s election in the wake of the Great Depression, ended the pattern of extreme sectional alignment characterized by a majority of one-party states and only few competitive (i.e. electorally available) ones. It nationalized the United States’ political arena with a nation-wide mobilization around a new social and economic policy cleavage that made the system more competitive as a whole:

[T]he Democratic Party was widely perceived in 1952 as the party of prosperity and the Republican Party as the party of depression. Great numbers of responses in that year

associated the Democrats with good times, the Republicans with economic distress. Secondly, there was in 1952 a broad measure of approval for the domestic policies of the New Deal and Fair Deal. (Campbell et al. 1960, p. 45)

We may think that in order to survive as a political project Europe needs Roosevelt-type leaders who re-frame the political conflict as a Europe-wide issue with discussions over European taxes and social policies. Such a process could indeed lead to a decline of sectional (i.e. national) alignment and trigger a process of Europeanization similar to the nationalization that occurred in the United States.

On the line of this need for a Europeanization process, Bartolini (2005, p. 389) mentions that “the importance of cross-border coordination among national social, political, and corporate actors with similar interests/values [...] is the core of the ‘Europeanization’ hypothesis”. Moreover, Caramani (2015, p. 286) reports figures of cross-territorial convergence indicating that European voters may not be far from such an accomplishment:

The integration of system-wide electorates and party systems represents a crucial step towards the structuring of political parties necessary for a ‘truly European’ accountable party system to emerge (Andeweg 1995, p. 67), that is [...] from a *Europe des patries* (in which European politics is structured around national identities and interests) to a *Europe des partis* (in which European politics is structured along non-territorial, functional, and Europe-wide alignments).

While my findings also point towards the realization of a European electoral structure across territorial lines, the structure I detect is not generated by the class-cleavage, which could have had a homogenization potential, but by the integration-demarcation one, which has a fundamentally disruptive potential: it seems to me that Europe has Europeanized for its own funeral.

We should not overlook the striking similarities between the sequences of two political dynamics: the Great Recession of this decade, and the Great Depression of the 1930s. In the latter case the sequence of events proceeded as follows: the crisis hit in the United States, it travelled to Europe, the German chancellor, Heinrich Brüning, enacted what we today call ‘austerity measures’ (including a credit crunch and wage and salary reductions), the

polarization of party system grew,⁷⁹ anti-establishment forces came to government. As today, the main difference probably lies in the absence of hyperinflation, which has made deflationary policies even less reasonable than in the past. Western democracies have already been down the same path, and the United States has already elected an anti-establishment president.

The empirical evidence proceeding from the ideal points' polarization indices has thus supported the hypothesis that European electoral competition is once again structured as it was in the 1930s, with radical populist forces opposing mainstream moderate parties. The previous findings show that the structure of competition has flipped again, under the pressure of a large economic and migration shock and subsequent policy reactions which have been either flawed or missing.

When the seriousness of the policy deadlock modified the structure of competition, so that the content of new structure is connected with the very existence of that political arena, then the nature of electoral democracy has changed. I label the current pathological (i.e. the conflict relates the own survival of the polity) state of electoral democracy as 'post-liberal' because it deviates from the cosmopolitan ideal of the liberal Enlightenment tradition. Challenger parties are currently attacking the pillars of liberal democracy, namely the division of powers and the existence of an independent judiciary, freedom of the press and media, and constitutionally established civil rights rather than rights based on the grounds of ethnicity or wealth. The bad news is that these challenger parties are no longer marginal, as they are currently perceived Europe-wide as representing one pole of the political space. The fact that the integration-demarcation dimension is orthogonal to the traditional left-right dimension means that most challenger parties are also ideologically radical parties. As a consequence, it comes as no surprise that the 'Europeanized' political arena presents the features of a polarized pluralist system, as identified by Sartori (1976, p. 122): anti-system and bilateral oppositions, centrifugal tendencies, ideological patterning ("when one finds a large ideological space, it follows that the polity contains parties that disagree not only on

⁷⁹ The anti-establishment vote at the 1928 German Federal elections was 13.2 per cent (10.6 per cent for the Communists and 2.6 per cent for the National Socialists); in 1930 the National Socialist and Communist share of the vote together amounted to about 32 per cent.

policies, but also, and more importantly, on principles and fundamentals”), and irresponsible oppositions.

The post-liberal democracy is the stage where the ‘light’ ideology of populism has spread freely, and the contestation of the elites that followed may pave the way for more radical solutions. This is nurtured on the fertile terrain of widespread grievances and resentment among economically deprived voters whose living and social conditions fall well below their expectations. In these conditions, an enemy has been found and scapegoated by political entrepreneurs in order to catalyse latent rage, to mobilize the radicals, and to radicalize the mobilized. With all the due differences and heterogeneity across member states, this is probably the current state of European democracies, insofar as I could detect for the cases analysed in this research.

This restructuring was already in the data before the Brexit referendum and the victory of Trump in the United States. It was there, but we could not detect it systematically, as our standard indices were confounded with measurement error, and because we often had a single left-right dimension in our minds. This contributes to explain the failure of political scientists to predict the current populist wave.

7.5 What is right? Acknowledging limits and assumptions

The two-stage Bayesian Aldrich-McKelvey model relaxes the strong assumptions that are frequently invoked in comparative studies of political behaviour. In the first place, voters’ positions can be retrieved from preference data by applying multidimensional scaling techniques (MDS). These rely, however, on the assumption of single-peaked preferences. I have two reasons to believe that such an assumption will not give satisfactory results. On the one hand, violations of single-peakedness are more likely when political parties compete in a multidimensional political space. On the other hand, the key aspect of the spatial model of party competition is exactly *whether or not* voter preferences are single-peaked. This means that standard preference data techniques assume what should be tested. By contrast, the Aldrich-McKelvey scaling, relying on perceptual data, does not need such a strong assumption.

In the second place, a naïve use of perceptual data is also flawed by strong assumptions, as voters interpret the scales used subjectively. One problem is that reported positions are not directly comparable between voters. Let us remember that this normally leads to some voters overusing certain ‘prominent’ categories (i.e. the ‘circus tent’ effect) and other types of systematic misplacements (Aldrich and McKelvey 1977). Differential Item Functioning depends on the fact that voters may interpret the issue scales differently (Hare et al. 2015). This problem is particularly probable with complex multidimensional concepts that leave respondents a much wider discretion over the meaning of the value labels. The Aldrich-McKelvey model explicitly estimates DIF, instead of assuming its absence. Moreover, DIF can also arise in comparative analyses from direct cross-country comparisons. As shown, implementing the Lo et al. (2014) anchoring strategy in a Bayesian estimation framework, it allows exerting leverage on EP political groups as bridging observations to link together the country-specific latent policy spaces. Bayesian implementations solve the problem of estimating uncertainty measures for voters’ parameters in the first-stage, and for country-level parameters in the second stage, as they arise naturally from the simulations. Moreover, missing values can also be easily accommodated using MCMC methods. Finally, beyond relaxing the assumption of direct comparability, I have also shown how this assumption generally leads to systematic rather than random errors.

For all these reasons I believe that scaling methods are a more appropriate tool for analysing political competition. In this context, there are at least two problematic aspects worth mentioning.

First, in the 2S-BAM procedure, I estimate the ideal points separately for the left-right dimension and the EU integration dimension. This means that I assume voters’ preferences are independent of how the policy packages can be combined. This ‘separable preferences’ assumption is satisfied if party positions on the second dimension do not affect voters’ perceptions on the first dimension. Thus, the assumption is violated, and preferences are non-separable, if voters connect party positions across the two dimensions. Thus, if voters think that opposing the EU is an inherently right-wing position, and this shifts their perception of the same party on the left-right scale, then this will lead to measurement error. Nevertheless, we must distinguish between spatial models of voting behaviour and descriptive spatial models of party competition. The issue of separability is more likely to be

a problem in the stage of explaining voting preferences, rather than in the estimation of party positions based on perceptual data, where the relevant quantity of interest is directly primed to the voter through an appropriate question wording. Thus, it is reasonable to think that voters are able to distinguish between issues and dimensions in their perceptions, even if these components have a non-separable effect on voting preferences. If this is not the case, then non-separability could affect practically any other political issue scale. In fact, the assumption of zero cross-issue substitution rates was first invoked in the theory of spatial voting (Enelow and Hinich 1984, p. 57). Moreover, a spatial model of voting with non-separable preferences has been estimated in Stoetzer and Zittlau (2015). While the theory is sound, and the issue deserves our full attention, the simulations show that only extreme violations of separability (i.e. correlations across issues of ± 1 , thus practically reducing to a unidimensional case) lead to a prediction error greater than 2% (see Figure 3 in their supplementary appendix). Thus, it seems unlikely that minor violations would have produced substantial variations of the findings presented.

Secondly, I assume direct comparability across elections. Just as voters and countries are affected by DIF distortions, it is also reasonable to think that the entire European political space is changing over time, and thus it would be ideal to estimate a Europe-wide shift and scale distortion parameters to meaningfully compare the 2009 and 2014 positions on the European Common Space. The main arguments to defend the direct comparability over time are the practical feasibility of these estimation and the challenge of identifying a viable anchoring strategy (see the following section). However, an additional argument is that it is reasonable to expect that larger aggregates may prove more static than smaller actors, as diverging country-specific latent shifts could be balanced in the aggregate. Nevertheless, temporal comparability should be regarded as an important aspect, particularly in long-term comparisons.

7.6 What is left? Perspectives, extensions and potential applications

Having seen the main assumptions and simplifications that were needed to practically implement the ideal point estimation, we can also note the most promising directions for future improvements of this area of research.

In the first place, we could estimate an Aldrich-McKelvey model with non-separable preferences. As mentioned, the attempt could follow the initial formulation of the perceptual model from (Enelow and Hinich 1984): $\theta_i = (\theta_{i1}, \theta_{i2}) = (b_{i1} + v_{i11}\pi_{\theta1} + v_{i21}\pi_{\theta2}, b_{i2} + v_{i12}\pi_{\theta1} + v_{i22}\pi_{\theta2})$; where v_{i12} and v_{i21} would be the key parameters, representing the change in the perception of the incumbent's position on one predictive dimension due to their position on the second predictive dimension. Of course, the estimation task may be daunting, particularly in a frequentist setting.

In the second place, an important extension of the model would be to allow valid cross-election comparisons in party positions over a long-time perspective. The easiest way to account for temporal distortions would be to focus on one country and to use long-term panel data. Then, one can either advance a naïve assumption of stability certain groups of 'anchoring voters' (i.e. partisans, older and politically sophisticated) assumed to have a fixed position in order to allow parties to move over time; or otherwise to use the Martin and Quinn's (2002) dynamic Bayesian IRT model to calculate temporal dependency and estimate dynamic ideal points. Alternatively, we can use cross-national cross-sectional surveys, but this means invoking a time-invariance assumption to bridge over time. One way to achieve this, given the lack of large comparative panel datasets, would be to look at legislators: we could consider the subset of legislators who have served for more than one legislature (i.e. elected for a second or third mandate) and use them as anchors to estimate a time-specific distortion parameter. This would assume a 'parallel trend' between the latent policy space of voters and of legislators, and this seems reasonable given that they both operate in the same political system. MEPs could thus be used to bridge the European Common Space over time. Third, the model and the estimation framework are flexible enough to be extended beyond the EU border. The same idea of Lo *et al.* (2014) of using EP groups as anchors, could be extended using international political alliances such as the International Alliance of Libertarian Parties, the alliance of the Global Greens, the Progressive Alliance, the Liberal International and so forth. This, coupled with an international survey with perceptual data such as CSES could be a feasible solution to estimate comparable party positions worldwide. Fourth, one of key features of the ideal points' framework presented in this thesis is the ability to map voters and party positions on the same latent space, making them directly comparable. I am surprised to see how little attention has been paid to scaling and

measurement models in ideological congruence and representation studies. The Aldrich-McKelvey model can be applied to any political scale when voters are sufficiently sophisticated to appreciate differences across political parties. Certainly, the more specific the issue, the less voters will discriminate, and the more likely the scaling model is not to converge. Nevertheless, perceptual data are not the only way to assess the predictions of congruence studies. In this respect, Voting Advice Applications (VAAs) represent a promising perspective, because research teams assess party positions on multiple issues allowing for a direct application of IRT models for ordinal data (e.g. Rating Scale Model, Partial Credit Model). VAAs in fact often provide a graphical representation of the respondent and the parties across a given political space (Trechsel, Garzia and De Sio 2014). A classic problem of VAAs, and the main reasons why they are not often adopted to test predictions, is the self-selection of VAA users. Harmonizing the issue selection process between VAAs and the representative election survey teams would be a solution to that problem.

7.7 Federalists of Europe, unite!

Finally, let us go back to the start: a spectre is haunting Europe, and it is indeed the spectre of populism. As a convinced empiricist, until this point I have left the floor to data and rational arguments, presented in a value-free manner (*wertfrei*). In the “Objectivity in Social Science and Social Policy” Max Weber writes:

[...] the second fundamental imperative of scientific freedom is that it should be constantly made clear to the readers [...] exactly at which point the scientific investigator becomes silent and the evaluating and acting person begins to speak. (Weber 2011, p. 60)

We have now come to that point. As a convinced supporter of the European federation, I believe that the transformation of electoral competition will represent the key political challenge for the next decade. The evidence suggests that the spread and increase of anti-establishment and populist parties has already changed the political space in the minds of European voters. European citizens are increasingly voicing their economic and political grievances by voting against traditional parties. Some are upset about welfare retrenchment and the consequent commodification of labour relations, others deplore the weakening of the nation state, the increasing permeability of national borders, territories and welfare systems.

The real question then is: how will traditional parties react to the expansion of the anti-establishment front and, most importantly, will they manage to contain and withstand the populist wave and to flip the policy space back to its traditional structure? In discussing these issues, I rely heavily on the work of Peter Mair — together with successive re-examinations of his work (e.g. Bardi, Bartolini, and Trechsel 2014) — who thoroughly studied consequences of growing populist parties for liberal democracy, particularly in terms of the tension between the responsibility and responsiveness of political parties.

In particular, Mair (2008) identifies five conditions for an effective and legitimate party government: a party wins control of the executive in competitive elections; leaders are selected through the parties; parties offer clear policy alternatives; policies are decided by the party in government; and the executive is held accountable through the parties. Mair observed how we have moved further away from, rather than closer to, achieving these five conditions over time. Starting from this consideration, Mair identifies the factors that may weaken the five conditions, including the key problem of multi-dimensionality.

There is also one other respect in which the conditions for the maintenance of party government are severely undermined, but which has received relatively scant attention in the literature. [...] a key condition for party government and for the responsible parties model is that both the policy programmes of the parties and the policy preferences of the voters be constrained by a single ideological dimension. The reasoning behind this argument is straightforward. Should two or more dimensions come into play, it would be impossible for either the voters or the parties to establish a relationship based on representation and accountability, since it would never be clear precisely which positions on which dimension had favoured support for one particular alternative over another. [...] the left–right dimension is the only dimension which is sufficiently elastic and pervasive to accommodate the various domains of voter identification, and which at the same time is sufficiently enduring to provide a stable reference point over time. In the absence of a left–right divide, however loosely defined, it is therefore difficult to imagine any other dimension that might offer the degree of coherence and clarity to the electorate and the parties taken as a whole. In the absence of a left–right dimension of competition, in other words, the entire foundation of the party government/responsible parties model is undermined. (Mair 2008, p. 228–29)

I believe that this viewpoint is indeed a possibility, but my findings point to a structural

change that seems to represent a probably local, temporary delimited, shift towards the integration/demarcation dimension, rather than an opening of the policy space to two simultaneous dimensions. Peter Mair did not foresee this possibility: “left-right [...] is not replaced by any alternative overarching paradigm [...] party policy and voter preferences evidence a lack of internal constraint of cohesion.” (Mair 2008, p. 230). My suspicion is that populist parties have already restructured the political space and that this has indeed managed to re-create a sufficient degree of internal cohesion and constraint outside of the left-right dimension, in terms of the integration-demarcation dimension. This, in other words, suggests that the contemporary form of party and electoral competition is based on the opposition between internationalists and nationalists, between European federalists and national confederates (or sovereigntists).

In fact, I do not think that this restructuring will last long, and I expect that the populist parties that manage to get into office will either institutionalize or implode, and the structure will sooner or later flip back to the more traditional left-right dimension. However, the key problem here is path dependency: even a short-term or medium-term re-structuring can last long enough to potentially erase the institutions that have been built in the past sixty years. As a supporter of European federalism, I believe that this ‘new era’ of European politics lies at the edge of what will be either the redemption or the end of Europe intended as a political project. I am afraid that the sovereigntist front is currently the favourite in this struggle, because it is the new actor in the arena. Thus, it can exploit the wedge of two centuries of social divisions in the underdog front of European federalists. Ideology is now working against the ultimate goal of a peaceful, strong and united Europe, a watchdog of democracy in the world: ideology can now undermine the prospect of a strong federalist alliance.

The new dimension of electoral competition is in fact unevenly structured, leading to a competitive advantage for the sovereigntist front. On the demand side, this demarcation alliance has a constituency of losers who have literally ‘nothing else to lose’. Their feelings and perceptions are a powerful blend of fear and anger involving them qua ‘*the people*’ and targeting the established rules and institutions of a dysfunctional *status quo*. The federalists, on the other hand, share the burden of being identified with the establishment, namely those who broke the economic game. On this side of the new political confrontation there is more cold rationality than warm emotionality. On the supply side, the sovereigntists can operate

through new or rapidly expanding political organizations. This means that it will be relatively easy to accommodate internal conflicts in a context of expanding support and electoral success. By contrast, the long-standing mainstream political forces (supposedly) supporting the federation, are in a state of profound internal divisions since their organizations are structured across the lines of the old economic conflict. Their problem is to join forces with their old antagonists to fight the new antagonists, with the complication that sub-constituencies may perceive the new antagonists as being no further from the old ones.

While waiting for finally bold policies to relaunch Europe, the survival of the Union will depend on the ability of the federalists across the entire ideological continuum to remain united against the confederates. Whether France will resist the National Front in April's elections will depend on the ability of the 'republican front' to become the 'European Front'. The passion for the European project will be measured by the availability to vote for our former adversaries. Federalists of Europe, unite!

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Appendix A The Bayesian AM scaling JAGS code script

Code for the first stage:

```

model{
  for(i in 1:N){ ##loop through respondents
  for(j in 1:q){ ##loop through stimuli
    z[i,j] ~ dnorm(mu[i,j], tau[i,j])
    mu[i,j] <- a[i] + b[i]*zhat[j]
    tau[i,j] <- tauj[j] * taui[i]
  }
}

##priors on a and b
for(i in 1:N){
  a[i] ~ dnorm(0,0.04)
  b[i] ~ dnorm(1,0.04)
}

##priors on variance
for(j in 1:q){
  tauj[j] ~ dunif(.1,100)
}
for(i in 1:N){
  taui[i] ~ dunif(.1,100)
}

##priors on zhat
zhat[1] ~ dnorm(0,1)T(0,10)
zhat[2] ~ dnorm(0,1)T(-10,0)
zhat[3] ~ dnorm(0,1)T(-10,10)
zhat[4] ~ dnorm(0,1)T(-10,0)
zhat[5] ~ dnorm(0,1)T(0,10)
zhat[6] ~ dnorm(0,1)T(0,10)

# Reparametrization constraint:
zbar <- mean(zhat)
zsd <- sd(zhat)
for (j in 1:q){
  zstar[j] <- (zhat[j]-zbar)/zsd
}

for(i in 1:N){
  bstar[i]<- b[i]*zsd
  astar[i]<- a[i]+(b[i]*zbar)
}

sigmai.sq <- 1/taui
sigmaj.sq <- 1/tauj
}

```


Appendix B The Bayesian AM scaling JAGS code script

Code for the second stage:

```

model{
  for(i in 1:N){
    z[i] ~ dnorm(mu[i], tau[i])
    mu[i] <- a[country[i]] + b[country[i]] *zhat[party[i]]
    tau[i] <- tauj[party[i]] * tauk[country[i]]
  }

  # priors on a and b
  for(k in 1:K){
    a[k] ~ dnorm(0,0.04)
    b[k] ~ dnorm(1,0.04)
    tauk[k] ~ dunif(.1,100)
  }

  for(j in 1:q){
    tauj[j] ~ dunif(.1,100)
  }

  ##priors on zhat
  zhat[1] ~ dnorm(0,1)T(-10,10)
  zhat[2] ~ dnorm(0,1)T(0,10)
  zhat[3] ~ dnorm(0,1)T(0,10)
  zhat[4] ~ dnorm(0,1)T(-10,0)
  zhat[5] ~ dnorm(0,1)T(0,10)
  zhat[6] ~ dnorm(0,1)T(0,10)
  zhat[7] ~ dnorm(0,1)T(-10,0)
  zhat[8] ~ dnorm(0,1)T(0,10)
  zhat[9] ~ dnorm(0,1)T(-10,0)
  zhat[10] ~ dnorm(0,1)T(-10,0)

  # Reparametrization constraint:
  zbar <- mean(zhat)
  zsd <- sd(zhat)
  for (j in 1:q){
    zstar[j] <- (zhat[j]-zbar)/zsd
  }

  for(k in 1:K){
    bstar[k]<- b[k]*zsd
    astar[k]<- a[k]+(b[k]*zbar)
  }

  sigmaj.sq <- 1/tauj
  sigmak.sq <- 1/tauk
}

```


Appendix C Regression tables for predictive validity models

Table C.1 – Predictive validity: effects of ideological distance on PTVs for centre-left parties

	DV: PTV_{PES}		DV: PTV_{PES}		DV: PTV_{PES}		(4) DV: PTV_{PES}	
	Controls only		Standard left-right distance		Ideal points' distance		Full model (standard + ideal)	
	<i>B (CI)</i>	<i>std. Beta (CI)</i>	<i>B (CI)</i>	<i>std. Beta (CI)</i>	<i>B (CI)</i>	<i>std. Beta (CI)</i>	<i>B (CI)</i>	<i>std. Beta (CI)</i>
Fixed Parts								
Age	0.00 (-0.00 – 0.00)	0.01 (-0.00 – 0.02)	0.00 (0.00 – 0.01)*	0.01 (0.00 – 0.03)	0.00 (-0.00 – 0.00)	0.01 (-0.00 – 0.02)	0.00 (0.00 – 0.00)*	0.01 (0.00 – 0.02)
Female	-0.31 (-0.39 – -0.24)***	-0.04 (-0.05 – -0.03)	-0.33 (-0.40 – -0.25)***	-0.05 (-0.06 – -0.04)	-0.25 (-0.32 – -0.18)***	-0.03 (-0.04 – -0.02)	-0.26 (-0.33 – -0.19)***	-0.04 (-0.05 – -0.03)
Age stopped education	0.01 (-0.05 – 0.06)	0.00 (-0.01 – 0.01)	-0.02 (-0.08 – 0.03)	-0.01 (-0.02 – 0.01)	-0.06 (-0.12 – -0.01)*	-0.01 (-0.03 – 0.00)	-0.07 (-0.12 – -0.02)**	-0.02 (-0.03 – 0.00)
Interest in politics [“Not at all” ref.]								
A little	0.48 (0.36 – 0.61)***	0.06 (0.05 – 0.08)	0.48 (0.36 – 0.60)***	0.06 (0.05 – 0.08)	0.48 (0.36 – 0.60)***	0.06 (0.05 – 0.08)	0.48 (0.36 – 0.60)***	0.06 (0.05 – 0.08)
Somewhat	0.60 (0.48 – 0.72)***	0.08 (0.07 – 0.10)	0.64 (0.53 – 0.76)***	0.09 (0.07 – 0.10)	0.61 (0.49 – 0.72)***	0.08 (0.07 – 0.10)	0.63 (0.52 – 0.75)***	0.09 (0.07 – 0.10)
Very	0.44 (0.30 – 0.58)***	0.05 (0.03 – 0.06)	0.60 (0.46 – 0.73)***	0.06 (0.05 – 0.08)	0.50 (0.36 – 0.63)***	0.05 (0.04 – 0.07)	0.58 (0.44 – 0.71)***	0.06 (0.05 – 0.08)
Social class [“Working class” ref]								

Lower-middle	-0.20 (-0.34 – -0.06)**	-0.02 (-0.03 – -0.01)	-0.27 (-0.41 – -0.14)***	-0.03 (-0.04 – -0.01)	-0.27 (-0.41 – -0.14)***	-0.03 (-0.04 – -0.01)	-0.30 (-0.44 – -0.17)***	-0.03 (-0.04 – -0.02)
Middle	-0.34 (-0.46 – -0.22)***	-0.05 (-0.06 – -0.03)	-0.41 (-0.52 – -0.29)***	-0.06 (-0.07 – -0.04)	-0.33 (-0.44 – -0.21)***	-0.04 (-0.06 – -0.03)	-0.36 (-0.48 – -0.25)***	-0.05 (-0.07 – -0.03)
Upper-middle	-0.42 (-0.56 – -0.27)***	-0.05 (-0.07 – -0.03)	-0.49 (-0.63 – -0.35)***	-0.06 (-0.08 – -0.04)	-0.34 (-0.48 – -0.20)***	-0.04 (-0.06 – -0.02)	-0.39 (-0.53 – -0.26)***	-0.05 (-0.06 – -0.03)
Upper	-0.69 (-0.89 – -0.49)***	-0.04 (-0.06 – -0.03)	-0.63 (-0.83 – -0.44)***	-0.04 (-0.05 – -0.03)	-0.49 (-0.68 – -0.30)***	-0.03 (-0.04 – -0.02)	-0.49 (-0.67 – -0.30)***	-0.03 (-0.04 – -0.02)
Living in urban area	0.06 (-0.05 – 0.17)	0.01 (-0.01 – 0.02)	0.08 (-0.02 – 0.19)	0.01 (-0.00 – 0.02)	0.04 (-0.06 – 0.14)	0.00 (-0.01 – 0.01)	0.06 (-0.04 – 0.16)	0.01 (-0.00 – 0.02)
Union membership [“No” ref.]								
Someone else in hh	0.50 (0.34 – 0.65)***	0.03 (0.02 – 0.04)	0.49 (0.34 – 0.64)***	0.03 (0.02 – 0.04)	0.46 (0.31 – 0.60)***	0.03 (0.02 – 0.04)	0.46 (0.32 – 0.61)***	0.03 (0.02 – 0.04)
Member	0.57 (0.46 – 0.68)***	0.06 (0.05 – 0.07)	0.58 (0.47 – 0.68)***	0.06 (0.05 – 0.07)	0.48 (0.37 – 0.58)***	0.05 (0.04 – 0.06)	0.49 (0.39 – 0.60)***	0.05 (0.04 – 0.06)
Member + someone in hh	0.96 (0.79 – 1.13)***	0.06 (0.05 – 0.07)	0.92 (0.76 – 1.09)***	0.06 (0.05 – 0.07)	0.78 (0.62 – 0.95)***	0.05 (0.04 – 0.06)	0.79 (0.63 – 0.95)***	0.05 (0.04 – 0.06)
Religious denomination [“No” ref.]								
Catholic	-0.13 (-0.24 – -0.02)*	-0.02 (-0.03 – -0.00)	-0.17 (-0.28 – -0.06)**	-0.02 (-0.04 – -0.01)	-0.06 (-0.17 – 0.04)	-0.01 (-0.02 – 0.01)	-0.09 (-0.20 – 0.01)	-0.01 (-0.03 – 0.00)
Protestant	-0.13 (-0.26 – -0.00)*	-0.01 (-0.03 – -0.00)	-0.20 (-0.33 – -0.08)**	-0.02 (-0.03 – -0.01)	-0.14 (-0.26 – -0.01)*	-0.01 (-0.03 – -0.00)	-0.18 (-0.30 – -0.05)**	-0.02 (-0.03 – -0.01)
Orthodox	0.83 (0.59 – 1.07)***	0.08 (0.06 – 0.10)	0.85 (0.61 – 1.08)***	0.08 (0.06 – 0.10)	0.83 (0.60 – 1.06)***	0.08 (0.06 – 0.10)	0.84 (0.62 – 1.06)***	0.08 (0.06 – 0.10)

Jewish	-0.17 (-1.28 – 0.95)	-0.00 (-0.01 – 0.01)	-0.27 (-1.36 – 0.81)	-0.00 (-0.01 – 0.01)	-0.37 (-1.44 – 0.69)	-0.00 (-0.01 – 0.01)	-0.41 (-1.46 – 0.65)	-0.00 (-0.01 – 0.01)
Muslim	1.43 (1.01 – 1.86)***	0.03 (0.02 – 0.04)	1.33 (0.92 – 1.75)***	0.03 (0.02 – 0.04)	1.20 (0.79 – 1.60)***	0.03 (0.02 – 0.04)	1.17 (0.77 – 1.57)***	0.03 (0.02 – 0.04)
Hindu	0.43 (-0.93 – 1.78)	0.00 (-0.01 – 0.01)	0.27 (-1.05 – 1.60)	0.00 (-0.01 – 0.01)	0.38 (-0.91 – 1.67)	0.00 (-0.01 – 0.01)	0.30 (-0.98 – 1.58)	0.00 (-0.01 – 0.01)
Buddhist	-0.47 (-1.20 – 0.27)	-0.01 (-0.02 – 0.00)	-0.26 (-0.98 – 0.45)	-0.00 (-0.01 – 0.01)	-0.52 (-1.21 – 0.18)	-0.01 (-0.02 – 0.00)	-0.40 (-1.09 – 0.30)	-0.01 (-0.01 – 0.00)
Other/DN	-0.05 (-0.27 – 0.17)	-0.00 (-0.01 – 0.01)	-0.10 (-0.31 – 0.12)	-0.00 (-0.01 – 0.01)	-0.09 (-0.30 – 0.12)	-0.00 (-0.01 – 0.01)	-0.11 (-0.32 – 0.10)	-0.01 (-0.01 – 0.00)
Church attendance	-0.17 (-0.20 – -0.14)***	-0.07 (-0.08 – -0.06)	-0.17 (-0.20 – -0.14)***	-0.07 (-0.08 – -0.06)	-0.11 (-0.14 – -0.09)***	-0.05 (-0.06 – -0.04)	-0.12 (-0.15 – -0.09)***	-0.05 (-0.06 – -0.04)
Government approval	0.97 (0.93 – 1.00)***	0.26 (0.25 – 0.27)	0.90 (0.86 – 0.93)***	0.24 (0.23 – 0.25)	0.79 (0.75 – 0.83)***	0.21 (0.20 – 0.22)	0.78 (0.74 – 0.81)***	0.21 (0.20 – 0.22)
Poor economic conditions	0.05 (-0.06 – 0.15)	0.01 (-0.01 – 0.02)	0.08 (-0.02 – 0.18)	0.01 (-0.00 – 0.02)	0.05 (-0.05 – 0.15)	0.01 (-0.01 – 0.02)	0.07 (-0.03 – 0.17)	0.01 (-0.00 – 0.02)
Standard left-right distance			-0.84 (-0.88 – -0.80)***	-0.21 (-0.21 – -0.20)			-0.48 (-0.52 – -0.44)***	-0.12 (-0.13 – -0.11)
Ideal points' distance					-1.04 (-1.07 – -1.00)***	-0.31 (-0.32 – -0.30)	-0.89 (-0.92 – -0.85)***	-0.27 (-0.28 – -0.25)
Random Parts								
σ^2	10.935		10.411		9.883		9.735	
$\tau_{00, it}$	0.911		0.848		0.895		0.853	
N_{it}	54		54		54		54	

ICC _{it}	0.077	0.075	0.083	0.081
Observations	34270	34270	34270	34270
R ² / Ω ₀ ²	.146 / .146	.187 / .187	.229 / .229	.240 / .240
AIC	179493.346	177813.631	176035.421	175516.516

*Notes: DV is Propensities to Vote (PTV) for centre-left parties belonging to the Party of European Socialists (PES). Hierarchical linear model estimates. Table entries represent the raw and standardized coefficients with confidence intervals. Significance stars: * p<.05 ** p<.01 *** p<.001.*

Table C.2 — Predictive validity: effects of ideological distance on PTVs for centre-right parties

	DV: PTV_{EPP}		DV: PTV_{EPP}		DV: PTV_{EPP}		(4) DV: PTV_{EPP}	
	Controls only		Standard left-right distance		Ideal points' distance		Full model (standard + ideal)	
	<i>B (CI)</i>	<i>std. Beta (CI)</i>	<i>B (CI)</i>	<i>std. Beta (CI)</i>	<i>B (CI)</i>	<i>std. Beta (CI)</i>	<i>B (CI)</i>	<i>std. Beta (CI)</i>
Fixed Parts								
Age	-0.01 (-0.01 – -0.01)***	-0.05 (-0.06 – -0.03)	-0.01 (-0.01 – -0.01)***	-0.04 (-0.05 – -0.03)	-0.01 (-0.01 – -0.00)***	-0.03 (-0.04 – -0.02)	-0.01 (-0.01 – -0.00)***	-0.03 (-0.04 – -0.01)
Female	0.14 (0.07 – 0.21)***	0.02 (0.01 – 0.03)	0.11 (0.04 – 0.18)**	0.01 (0.01 – 0.02)	0.05 (-0.02 – 0.12)	0.01 (-0.00 – 0.02)	0.05 (-0.02 – 0.12)	0.01 (-0.00 – 0.02)
Age stopped education	-0.05 (-0.11 – 0.00)	-0.01 (-0.02 – 0.00)	-0.10 (-0.15 – -0.04)***	-0.02 (-0.03 – -0.01)	-0.04 (-0.09 – 0.01)	-0.01 (-0.02 – 0.00)	-0.07 (-0.12 – -0.02)**	-0.01 (-0.03 – -0.00)
Interest in politics [“Not at all” ref.]								
A little	0.43 (0.31 – 0.56)***	0.05 (0.04 – 0.07)	0.41 (0.29 – 0.53)***	0.05 (0.04 – 0.06)	0.45 (0.33 – 0.56)***	0.05 (0.04 – 0.07)	0.43 (0.31 – 0.54)***	0.05 (0.04 – 0.07)
Somewhat	0.48 (0.36 – 0.60)***	0.06 (0.05 – 0.08)	0.51 (0.39 – 0.62)***	0.07 (0.05 – 0.08)	0.54 (0.42 – 0.65)***	0.07 (0.06 – 0.09)	0.54 (0.43 – 0.66)***	0.07 (0.06 – 0.09)
Very	0.22 (0.08 – 0.36)**	0.02 (0.01 – 0.04)	0.38 (0.24 – 0.51)***	0.04 (0.02 – 0.05)	0.42 (0.29 – 0.55)***	0.04 (0.03 – 0.06)	0.48 (0.35 – 0.61)***	0.05 (0.04 – 0.06)
Social class [“Working class” ref]								
Lower-middle	0.44 (0.30 – 0.58)***	0.04 (0.03 – 0.06)	0.28 (0.15 – 0.42)***	0.03 (0.01 – 0.04)	0.27 (0.14 – 0.41)***	0.03 (0.01 – 0.04)	0.21 (0.08 – 0.34)**	0.02 (0.01 – 0.03)

Middle	0.67 (0.55 – 0.80)***	0.09 (0.07 – 0.10)	0.49 (0.37 – 0.60)***	0.06 (0.05 – 0.08)	0.41 (0.29 – 0.52)***	0.05 (0.04 – 0.07)	0.34 (0.23 – 0.45)***	0.05 (0.03 – 0.06)
Upper-middle	1.18 (1.04 – 1.33)***	0.14 (0.12 – 0.15)	0.94 (0.80 – 1.07)***	0.11 (0.09 – 0.12)	0.82 (0.69 – 0.96)***	0.09 (0.08 – 0.11)	0.74 (0.61 – 0.87)***	0.09 (0.07 – 0.10)
Upper	1.47 (1.27 – 1.67)***	0.09 (0.08 – 0.10)	1.27 (1.08 – 1.46)***	0.08 (0.07 – 0.09)	1.07 (0.88 – 1.26)***	0.07 (0.05 – 0.08)	1.03 (0.84 – 1.21)***	0.06 (0.05 – 0.08)
Living in urban area	-0.13 (-0.24 – -0.03)*	-0.01 (-0.02 – -0.00)	-0.10 (-0.21 – 0.00)	-0.01 (-0.02 – 0.00)	-0.09 (-0.19 – 0.01)	-0.01 (-0.02 – 0.00)	-0.08 (-0.18 – 0.02)	-0.01 (-0.02 – 0.00)
Union membership [“No” ref.]								
Someone else in hh	-0.20 (-0.35 – -0.05)*	-0.01 (-0.02 – -0.00)	-0.11 (-0.26 – 0.04)	-0.01 (-0.02 – 0.00)	-0.11 (-0.25 – 0.04)	-0.01 (-0.02 – 0.00)	-0.07 (-0.21 – 0.07)	-0.00 (-0.01 – 0.00)
Member	-0.50 (-0.60 – -0.39)***	-0.05 (-0.06 – -0.04)	-0.41 (-0.51 – -0.31)***	-0.04 (-0.05 – -0.03)	-0.33 (-0.43 – -0.23)***	-0.03 (-0.04 – -0.02)	-0.31 (-0.41 – -0.21)***	-0.03 (-0.04 – -0.02)
Member + someone in hh	-0.49 (-0.66 – -0.32)***	-0.03 (-0.04 – -0.02)	-0.38 (-0.55 – -0.22)***	-0.02 (-0.03 – -0.01)	-0.25 (-0.41 – -0.09)**	-0.02 (-0.02 – -0.01)	-0.23 (-0.39 – -0.07)**	-0.01 (-0.02 – -0.00)
Religious denomination [“No” ref.]								
Catholic	0.79 (0.67 – 0.90)***	0.10 (0.09 – 0.12)	0.68 (0.57 – 0.79)***	0.09 (0.07 – 0.10)	0.58 (0.47 – 0.68)***	0.08 (0.06 – 0.09)	0.55 (0.45 – 0.66)***	0.07 (0.06 – 0.09)
Protestant	0.53 (0.40 – 0.66)***	0.05 (0.04 – 0.06)	0.38 (0.25 – 0.51)***	0.04 (0.02 – 0.05)	0.29 (0.17 – 0.41)***	0.03 (0.02 – 0.04)	0.25 (0.12 – 0.37)***	0.02 (0.01 – 0.04)
Orthodox	0.12 (-0.12 – 0.37)	0.01 (-0.01 – 0.03)	0.22 (-0.01 – 0.45)	0.02 (-0.00 – 0.04)	0.14 (-0.09 – 0.37)	0.01 (-0.01 – 0.03)	0.20 (-0.03 – 0.42)	0.02 (-0.00 – 0.04)
Jewish	-0.41 (-1.54 – 0.72)	-0.00 (-0.01 – 0.01)	-0.43 (-1.52 – 0.66)	-0.00 (-0.01 – 0.01)	-0.42 (-1.49 – 0.64)	-0.00 (-0.01 – 0.01)	-0.44 (-1.49 – 0.62)	-0.00 (-0.01 – 0.01)

Muslim	-0.21 (-0.64 – 0.21)	-0.00 (-0.01 – 0.00)	-0.14 (-0.55 – 0.27)	-0.00 (-0.01 – 0.01)	-0.13 (-0.53 – 0.27)	-0.00 (-0.01 – 0.01)	-0.10 (-0.49 – 0.30)	-0.00 (-0.01 – 0.01)
Hindu	0.48 (-0.90 – 1.87)	0.00 (-0.01 – 0.01)	0.37 (-0.96 – 1.71)	0.00 (-0.01 – 0.01)	0.37 (-0.93 – 1.68)	0.00 (-0.01 – 0.01)	0.33 (-0.97 – 1.62)	0.00 (-0.01 – 0.01)
Buddhist	-0.31 (-1.05 – 0.43)	-0.00 (-0.01 – 0.01)	-0.21 (-0.92 – 0.51)	-0.00 (-0.01 – 0.01)	-0.13 (-0.83 – 0.57)	-0.00 (-0.01 – 0.01)	-0.10 (-0.79 – 0.59)	-0.00 (-0.01 – 0.01)
Other/DN	0.11 (-0.11 – 0.33)	0.00 (-0.00 – 0.01)	0.05 (-0.17 – 0.26)	0.00 (-0.01 – 0.01)	0.07 (-0.14 – 0.27)	0.00 (-0.01 – 0.01)	0.04 (-0.17 – 0.24)	0.00 (-0.01 – 0.01)
Church attendance	0.33 (0.30 – 0.36)***	0.13 (0.12 – 0.14)	0.30 (0.27 – 0.33)***	0.12 (0.11 – 0.13)	0.27 (0.25 – 0.30)***	0.11 (0.10 – 0.12)	0.27 (0.24 – 0.29)***	0.11 (0.09 – 0.12)
Government approval	1.27 (1.23 – 1.31)***	0.33 (0.32 – 0.34)	1.16 (1.13 – 1.20)***	0.30 (0.29 – 0.31)	1.02 (0.98 – 1.06)***	0.26 (0.25 – 0.27)	1.00 (0.97 – 1.04)***	0.26 (0.25 – 0.27)
Poor economic conditions	-0.22 (-0.32 – -0.12)***	-0.02 (-0.04 – -0.01)	-0.16 (-0.26 – -0.06)**	-0.02 (-0.03 – -0.01)	-0.14 (-0.24 – -0.04)**	-0.02 (-0.03 – -0.00)	-0.12 (-0.22 – -0.02)*	-0.01 (-0.02 – -0.00)
Standard left-right distance			-1.02 (-1.06 – -0.98)***	-0.23 (-0.24 – -0.22)			-0.61 (-0.65 – -0.56)***	-0.14 (-0.15 – -0.13)
Ideal points' distance					-1.15 (-1.18 – -1.11)***	-0.32 (-0.33 – -0.31)	-0.94 (-0.98 – -0.90)***	-0.26 (-0.27 – -0.25)
Random Parts								
σ^2	10.860		10.145		9.696		9.480	
$\tau_{00,it}$	0.896		0.734		0.760		0.686	
N_{it}	54		54		54		54	
ICC_{it}	0.076		0.067		0.073		0.067	
Observations	34143		34143		34143		34143	
R^2 / Ω_0^2	.222 / .222		.274 / .274		.306 / .306		.321 / .321	

AIC	178596.221	176263.835	174722.282	173951.981
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*Notes: DV is Propensities to Vote (PTV) for centre-right parties belonging to the European People's Party (EPP). Hierarchical linear model estimates. Table entries represent the raw and standardized coefficients with confidence intervals. Significance stars: * $p < .05$ ** $p < .01$ *** $p < .001$.*

Table C.3 — Predictive validity: effects of ideological distance on PTVs for far-left parties

	DV: PTV_{EUL}		DV: PTV_{EUL}		DV: PTV_{EUL}		(4) DV: PTV_{EUL}	
	Controls only		Standard left-right distance		Ideal points' distance		Full model (standard + ideal)	
	<i>B</i> (CI)	<i>std. Beta</i> (CI)	<i>B</i> (CI)	<i>std. Beta</i> (CI)	<i>B</i> (CI)	<i>std. Beta</i> (CI)	<i>B</i> (CI)	<i>std. Beta</i> (CI)
Fixed Parts								
Age	-0.01 (-0.01 — -0.01)***	-0.05 (-0.07 — -0.04)	-0.01 (-0.01 — -0.01)***	-0.05 (-0.07 — -0.04)	-0.01 (-0.01 — -0.01)***	-0.05 (-0.07 — -0.04)	-0.01 (-0.01 — -0.01)***	-0.05 (-0.07 — -0.04)
Female	-0.27 (-0.35 — -0.18)***	-0.04 (-0.05 — -0.03)	-0.27 (-0.35 — -0.18)***	-0.04 (-0.05 — -0.03)	-0.16 (-0.24 — -0.08)***	-0.02 (-0.04 — -0.01)	-0.15 (-0.23 — -0.07)***	-0.02 (-0.03 — -0.01)
Age stopped education	0.06 (-0.00 — 0.12)	0.01 (-0.00 — 0.03)	0.05 (-0.01 — 0.12)	0.01 (-0.00 — 0.03)	-0.02 (-0.08 — 0.03)	-0.01 (-0.02 — 0.01)	-0.02 (-0.08 — 0.04)	-0.00 (-0.02 — 0.01)
Interest in politics [“Not at all” ref.]								
A little	0.54 (0.39 — 0.69)***	0.07 (0.05 — 0.09)	0.53 (0.38 — 0.68)***	0.07 (0.05 — 0.09)	0.44 (0.30 — 0.58)***	0.06 (0.04 — 0.08)	0.44 (0.30 — 0.58)***	0.06 (0.04 — 0.08)
Somewhat	0.62 (0.47 — 0.77)***	0.09 (0.07 — 0.11)	0.62 (0.47 — 0.77)***	0.09 (0.07 — 0.11)	0.47 (0.33 — 0.61)***	0.07 (0.05 — 0.09)	0.46 (0.32 — 0.60)***	0.07 (0.05 — 0.09)
Very	0.73 (0.56 — 0.90)***	0.09 (0.07 — 0.10)	0.75 (0.58 — 0.92)***	0.09 (0.07 — 0.11)	0.48 (0.32 — 0.64)***	0.06 (0.04 — 0.07)	0.46 (0.30 — 0.62)***	0.05 (0.03 — 0.07)
Social class [“Working class” ref]								
Lower-middle	-0.71 (-0.89 — -0.54)***	-0.08 (-0.09 — -0.06)	-0.73 (-0.91 — -0.56)***	-0.08 (-0.10 — -0.06)	-0.67 (-0.83 — -0.51)***	-0.07 (-0.09 — -0.05)	-0.66 (-0.82 — -0.49)***	-0.07 (-0.09 — -0.05)

Middle	-1.11 (-1.26 – -0.96)***	-0.16 (-0.19 – -0.14)	-1.12 (-1.27 – -0.97)***	-0.17 (-0.19 – -0.14)	-0.86 (-0.99 – -0.72)***	-0.13 (-0.15 – -0.11)	-0.84 (-0.98 – -0.70)***	-0.12 (-0.14 – -0.10)
Upper-middle	-1.53 (-1.71 – -1.36)***	-0.20 (-0.22 – -0.18)	-1.54 (-1.72 – -1.37)***	-0.20 (-0.22 – -0.18)	-1.17 (-1.33 – -1.00)***	-0.15 (-0.17 – -0.13)	-1.15 (-1.31 – -0.99)***	-0.15 (-0.17 – -0.13)
Upper	-1.70 (-1.94 – -1.46)***	-0.12 (-0.14 – -0.10)	-1.69 (-1.93 – -1.45)***	-0.12 (-0.14 – -0.10)	-1.25 (-1.47 – -1.03)***	-0.09 (-0.11 – -0.07)	-1.25 (-1.48 – -1.03)***	-0.09 (-0.11 – -0.07)
Living in urban area*	-	-	-	-	-	-	-	-
Union membership [“No” ref.]								
Someone else in hh	0.27 (0.09 – 0.45)**	0.02 (0.01 – 0.03)	0.26 (0.08 – 0.44)**	0.02 (0.01 – 0.03)	0.16 (-0.00 – 0.33)	0.01 (-0.00 – 0.02)	0.17 (0.00 – 0.33)*	0.01 (0.00 – 0.02)
Member	0.70 (0.57 – 0.82)***	0.08 (0.06 – 0.09)	0.69 (0.56 – 0.82)***	0.08 (0.06 – 0.09)	0.42 (0.30 – 0.54)***	0.05 (0.03 – 0.06)	0.42 (0.30 – 0.53)***	0.05 (0.03 – 0.06)
Member + someone in hh	0.95 (0.75 – 1.14)***	0.07 (0.05 – 0.08)	0.93 (0.74 – 1.12)***	0.07 (0.05 – 0.08)	0.55 (0.37 – 0.72)***	0.04 (0.03 – 0.05)	0.55 (0.37 – 0.73)***	0.04 (0.03 – 0.05)
Religious denomination [“No” ref.]								
Catholic	-0.66 (-0.80 – -0.53)***	-0.09 (-0.11 – -0.08)	-0.66 (-0.80 – -0.53)***	-0.10 (-0.11 – -0.08)	-0.39 (-0.52 – -0.27)***	-0.06 (-0.07 – -0.04)	-0.38 (-0.51 – -0.26)***	-0.05 (-0.07 – -0.04)
Protestant	-0.90 (-1.05 – -0.74)***	-0.10 (-0.12 – -0.08)	-0.90 (-1.06 – -0.74)***	-0.10 (-0.12 – -0.09)	-0.69 (-0.84 – -0.55)***	-0.08 (-0.10 – -0.06)	-0.68 (-0.83 – -0.54)***	-0.08 (-0.10 – -0.06)
Orthodox	-0.07 (-0.45 – 0.31)	-0.01 (-0.04 – 0.03)	-0.08 (-0.46 – 0.30)	-0.01 (-0.05 – 0.03)	0.12 (-0.23 – 0.47)	0.01 (-0.02 – 0.05)	0.14 (-0.21 – 0.49)	0.01 (-0.02 – 0.05)
Jewish	-1.13 (-2.42 – 0.15)	-0.01 (-0.02 – 0.00)	-1.12 (-2.40 – 0.16)	-0.01 (-0.02 – 0.00)	-1.35 (-2.54 – -0.15)*	-0.01 (-0.02 – -0.00)	-1.36 (-2.55 – -0.17)*	-0.01 (-0.03 – -0.00)

Muslim	0.99 (0.40 – 1.58)**	0.02 (0.01 – 0.03)	1.02 (0.43 – 1.61)***	0.02 (0.01 – 0.03)	0.77 (0.23 – 1.32)**	0.02 (0.00 – 0.03)	0.74 (0.19 – 1.28)**	0.02 (0.00 – 0.03)
Hindu	-0.12 (-2.12 – 1.89)	-0.00 (-0.01 – 0.01)	-0.13 (-2.13 – 1.87)	-0.00 (-0.01 – 0.01)	0.08 (-1.78 – 1.94)	0.00 (-0.01 – 0.01)	0.10 (-1.76 – 1.95)	0.00 (-0.01 – 0.01)
Buddhist	0.30 (-0.52 – 1.12)	0.00 (-0.01 – 0.02)	0.32 (-0.50 – 1.15)	0.00 (-0.01 – 0.02)	0.19 (-0.57 – 0.95)	0.00 (-0.01 – 0.01)	0.17 (-0.60 – 0.93)	0.00 (-0.01 – 0.01)
Other/DN	-0.18 (-0.46 – 0.09)	-0.01 (-0.02 – 0.00)	-0.20 (-0.47 – 0.07)	-0.01 (-0.02 – 0.00)	-0.11 (-0.36 – 0.14)	-0.01 (-0.02 – 0.01)	-0.09 (-0.35 – 0.16)	-0.00 (-0.02 – 0.01)
Church attendance	-0.18 (-0.22 – -0.15)***	-0.08 (-0.10 – -0.07)	-0.18 (-0.22 – -0.15)***	-0.08 (-0.10 – -0.06)	-0.10 (-0.13 – -0.07)***	-0.04 (-0.06 – -0.03)	-0.10 (-0.13 – -0.07)***	-0.04 (-0.06 – -0.03)
Government approval	0.58 (0.53 – 0.63)***	0.17 (0.15 – 0.18)	0.58 (0.53 – 0.63)***	0.17 (0.15 – 0.18)	0.43 (0.38 – 0.47)***	0.12 (0.11 – 0.14)	0.42 (0.38 – 0.47)***	0.12 (0.11 – 0.13)
Poor economic conditions	0.24 (0.10 – 0.37)***	0.03 (0.01 – 0.04)	0.25 (0.12 – 0.39)***	0.03 (0.01 – 0.05)	0.24 (0.12 – 0.37)***	0.03 (0.01 – 0.04)	0.23 (0.10 – 0.35)***	0.03 (0.01 – 0.04)
Standard left- right distance			-0.17 (-0.22 – -0.12)***	-0.04 (-0.06 – -0.03)			0.16 (0.11 – 0.20)***	0.04 (0.03 – 0.05)
Ideal points' distance					-1.08 (-1.12 – -1.05)***	-0.37 (-0.38 – -0.35)	-1.11 (-1.15 – -1.07)***	-0.38 (-0.39 – -0.36)
Random Parts								
σ^2	9.368		9.347		8.071		8.055	
$\tau_{00,it}$	0.779		0.765		0.676		0.684	
N_{it}	28		28		28		28	
ICC_{it}	0.077		0.076		0.077		0.078	
Observations	20362		20362		20362		20362	
R^2 / Ω_0^2	.164 / .164		.166 / .166		.280 / .280		.281 / .281	

AIC	103508.326	103465.167	100478.171	100438.902
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*Notes: DV is Propensities to Vote (PTV) for far-left parties belonging to the European United Left (EUL). Hierarchical linear model estimates. Table entries represent the raw and standardized coefficients with confidence intervals. Significance stars: * $p < .05$ ** $p < .01$ *** $p < .001$. * all non-missing voters reported to live in urban areas; not every country has a national party in the EUL group in the EP, thus the number of observations is lower than in the previous tables.*

Table C.4—Predictive validity: effects of ideological distance on PTVs for far-right parties

	DV: PTV_{ENF}		DV: PTV_{ENF}		DV: PTV_{ENF}		(4) DV: PTV_{ENF}	
	Controls only		Standard left-right distance		Ideal points' distance		Full model (standard + ideal)	
	<i>B</i> (CI)	<i>std. Beta</i> (CI)	<i>B</i> (CI)	<i>std. Beta</i> (CI)	<i>B</i> (CI)	<i>std. Beta</i> (CI)	<i>B</i> (CI)	<i>std. Beta</i> (CI)
Fixed Parts								
Age	-0.02 (-0.02 – -0.01)***	-0.09 (-0.10 – -0.07)	-0.02 (-0.02 – -0.01)***	-0.08 (-0.09 – -0.06)	-0.02 (-0.02 – -0.01)***	-0.08 (-0.09 – -0.06)	-0.01 (-0.02 – -0.01)***	-0.07 (-0.08 – -0.06)
Female	0.39 (0.30 – 0.48)***	0.06 (0.04 – 0.07)	0.34 (0.25 – 0.42)***	0.05 (0.04 – 0.06)	0.30 (0.21 – 0.38)***	0.04 (0.03 – 0.06)	0.28 (0.20 – 0.37)***	0.04 (0.03 – 0.05)
Age stopped education	-0.42 (-0.49 – -0.35)***	-0.10 (-0.11 – -0.08)	-0.43 (-0.49 – -0.36)***	-0.10 (-0.11 – -0.08)	-0.38 (-0.45 – -0.32)***	-0.09 (-0.10 – -0.07)	-0.39 (-0.46 – -0.33)***	-0.09 (-0.11 – -0.08)
Interest in politics [“Not at all” ref.]								
A little	0.06 (-0.09 – 0.22)	0.01 (-0.01 – 0.03)	0.05 (-0.10 – 0.21)	0.01 (-0.01 – 0.03)	0.06 (-0.09 – 0.21)	0.01 (-0.01 – 0.03)	0.06 (-0.09 – 0.21)	0.01 (-0.01 – 0.03)
Somewhat	-0.21 (-0.36 – -0.05)**	-0.03 (-0.05 – -0.01)	-0.17 (-0.32 – -0.02)*	-0.03 (-0.05 – -0.00)	-0.14 (-0.28 – 0.01)	-0.02 (-0.04 – 0.00)	-0.13 (-0.28 – 0.02)	-0.02 (-0.04 – 0.00)
Very	-0.44 (-0.62 – -0.27)***	-0.05 (-0.07 – -0.03)	-0.30 (-0.47 – -0.12)***	-0.03 (-0.05 – -0.01)	-0.25 (-0.42 – -0.08)**	-0.03 (-0.05 – -0.01)	-0.20 (-0.37 – -0.03)*	-0.02 (-0.04 – -0.00)
Social class [“Working class” ref]								
Lower-middle	0.04 (-0.13 – 0.20)	0.00 (-0.01 – 0.02)	-0.04 (-0.20 – 0.12)	-0.00 (-0.02 – 0.01)	-0.09 (-0.24 – 0.07)	-0.01 (-0.03 – 0.01)	-0.11 (-0.26 – 0.05)	-0.01 (-0.03 – 0.01)

Middle	-0.04 (-0.18 – 0.10)	-0.01 (-0.03 – 0.02)	-0.10 (-0.24 – 0.04)	-0.01 (-0.03 – 0.01)	-0.23 (-0.36 – -0.09)**	-0.03 (-0.05 – -0.01)	-0.23 (-0.36 – -0.09)***	-0.03 (-0.05 – -0.01)
Upper-middle	-0.14 (-0.31 – 0.03)	-0.02 (-0.04 – 0.00)	-0.23 (-0.39 – -0.06)**	-0.03 (-0.05 – 0.01)	-0.39 (-0.56 – -0.23)***	-0.05 (-0.07 – -0.03)	-0.40 (-0.56 – -0.23)***	-0.05 (-0.07 – -0.03)
Upper	-0.10 (-0.35 – 0.15)	-0.01 (-0.02 – 0.01)	-0.16 (-0.41 – 0.09)	-0.01 (-0.03 – 0.01)	-0.34 (-0.58 – -0.10)**	-0.02 (-0.04 – -0.01)	-0.33 (-0.57 – -0.09)**	-0.02 (-0.04 – -0.01)
Living in urban area	0.03 (-0.12 – 0.19)	0.00 (-0.01 – 0.02)	0.04 (-0.11 – 0.19)	0.00 (-0.01 – 0.02)	0.05 (-0.10 – 0.20)	0.00 (-0.01 – -0.02)	0.05 (-0.10 – 0.20)	0.00 (-0.01 – 0.02)
Union membership [“No” ref.]								
Someone else in hh	0.13 (-0.05 – 0.31)	0.01 (-0.00 – 0.02)	0.14 (-0.04 – 0.32)	0.01 (-0.00 – 0.02)	0.22 (0.05 – 0.40)*	0.02 (0.00 – 0.03)	0.21 (0.04 – 0.38)*	0.02 (0.00 – 0.03)
Member	-0.25 (-0.38 – -0.12)***	-0.03 (-0.04 – -0.01)	-0.21 (-0.34 – -0.09)**	-0.02 (-0.04 – -0.01)	-0.11 (-0.23 – 0.02)	-0.01 (-0.03 – 0.00)	-0.11 (-0.24 – 0.02)	-0.01 (-0.03 – 0.00)
Member + someone in hh	-0.15 (-0.36 – 0.05)	-0.01 (-0.02 – 0.00)	-0.12 (-0.32 – 0.08)	-0.01 (-0.02 – 0.01)	0.04 (-0.16 – 0.23)	0.00 (-0.01 – 0.02)	0.03 (-0.17 – 0.22)	0.00 (-0.01 – 0.02)
Religious denomination [“No” ref.]								
Catholic	0.25 (0.12 – 0.39)***	0.04 (0.02 – 0.06)	0.22 (0.09 – 0.36)**	0.03 (0.01 – 0.05)	0.12 (-0.02 – 0.25)	0.02 (-0.00 – 0.04)	0.12 (-0.01 – 0.25)	0.02 (-0.00 – 0.04)
Protestant	0.34 (0.17 – 0.50)***	0.03 (0.02 – 0.05)	0.25 (0.09 – 0.42)**	0.03 (0.01 – 0.04)	0.15 (-0.01 – 0.31)	0.02 (-0.00 – 0.03)	0.14 (-0.02 – 0.30)	0.01 (-0.00 – 0.03)
Orthodox	0.10 (-0.19 – 0.40)	0.01 (-0.02 – 0.04)	0.06 (-0.23 – 0.35)	0.01 (-0.02 – 0.04)	-0.06 (-0.34 – 0.23)	-0.01 (-0.04 – 0.02)	-0.06 (-0.34 – 0.23)	-0.01 (-0.04 – 0.02)
Jewish	-0.21 (-1.43 – 1.01)	-0.00 (-0.02 – 0.01)	-0.26 (-1.46 – 0.94)	-0.00 (-0.02 – 0.01)	-0.09 (-1.27 – 1.09)	-0.00 (-0.01 – 0.01)	-0.14 (-1.31 – 1.03)	-0.00 (-0.01 – 0.01)

Muslim	-1.29 (-1.80 – -0.77)***	-0.03 (-0.05 – -0.02)	-1.13 (-1.63 – -0.62)***	-0.03 (-0.04 – -0.02)	-1.18 (-1.67 – -0.68)***	-0.03 (-0.04 – -0.02)	-1.11 (-1.60 – -0.62)***	-0.03 (-0.04 – -0.02)
Hindu	0.97 (-0.59 – 2.52)	0.01 (-0.00 – 0.02)	0.65 (-0.87 – 2.18)	0.01 (-0.01 – 0.02)	0.82 (-0.68 – 2.32)	0.01 (-0.01 – 0.02)	0.68 (-0.82 – 2.17)	0.01 (-0.01 – 0.02)
Buddhist	-0.21 (-1.05 – 0.64)	-0.00 (-0.02 – 0.01)	-0.14 (-0.97 – 0.69)	-0.00 (-0.01 – 0.01)	0.09 (-0.72 – 0.91)	0.00 (-0.01 – 0.01)	0.08 (-0.73 – 0.89)	0.00 (-0.01 – 0.01)
Other/DN	-0.14 (-0.41 – 0.13)	-0.01 (-0.02 – 0.01)	-0.12 (-0.39 – 0.14)	-0.01 (-0.02 – 0.01)	-0.12 (-0.38 – 0.14)	-0.01 (-0.02 – 0.01)	-0.12 (-0.38 – 0.14)	-0.01 (-0.02 – 0.01)
Church attendance	0.06 (0.03 – 0.10)***	0.03 (0.01 – 0.04)	0.06 (0.02 – 0.09)**	0.03 (0.01 – 0.04)	0.03 (-0.01 – 0.06)	0.01 (-0.00 – 0.03)	0.03 (-0.01 – 0.07)	0.01 (-0.00 – 0.03)
Government approval	0.36 (0.32 – 0.41)***	0.10 (0.09 – 0.12)	0.36 (0.31 – 0.41)***	0.10 (0.09 – 0.12)	0.41 (0.37 – 0.46)***	0.12 (0.11 – 0.13)	0.41 (0.36 – 0.45)***	0.12 (0.10 – 0.13)
Poor economic conditions	0.18 (0.04 – 0.31)**	0.02 (0.01 – 0.04)	0.18 (0.05 – 0.31)**	0.02 (0.01 – 0.04)	0.20 (0.07 – 0.33)**	0.02 (0.01 – 0.04)	0.19 (0.06 – 0.32)**	0.02 (0.01 – 0.04)
Standard left- right distance			-0.69 (-0.74 – -0.65)***	-0.18 (-0.20 – -0.17)			-0.36 (-0.41 – -0.31)***	-0.10 (-0.11 – -0.08)
Ideal points' distance					-0.88 (-0.92 – -0.84)***	-0.27 (-0.28 – -0.25)	-0.74 (-0.79 – -0.69)***	-0.22 (-0.24 – -0.21)
Random Parts								
σ^2	9.922		9.549		9.221		9.136	
$\tau_{00,it}$	0.814		0.779		0.724		0.716	
N_{it}	33		33		33		33	
ICC_{it}	0.076		0.075		0.073		0.073	
Observations	20732		20732		20732		20732	
R^2 / Ω_0^2	.121 / .121		.154 / .154		.183 / .183		.190 / .190	

AIC	106595.092	105802.356	105076.835	104888.166
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*Notes: DV is Propensities to Vote (PTV) for far-right parties belonging to the Europe of Nation and Freedom (ENF) or far-right parties non-Inscrit to any EP group. Hierarchical linear model estimates. Table entries represent the raw and standardized coefficients with confidence intervals. Significance stars: * $p < .05$ ** $p < .01$ *** $p < .001$.*

Appendix D Description of the main variables of interest

Table D.1 — Descriptive statistics of main variables of interest

Variable	Explanation	Measurement Level	N	missings	missings %	mean	sd	median	min	max	range
age.cat*	Age categories	Categorical	55731	324	0.58	3.43	1.24	4	1	5	4
female*	Gender	Categorical	56054	1	0	1.45	0.5	1	1	2	1
educ_age.rec*	Age quit full time education	Categorical	55070	985	1.76	2.25	0.72	2	1	3	2
lr	Self-reported left-right	Ordinal	47216	8839	15.77	5.2	2.67	5	0	10	10
eu	Self-reported position on EU integration	Ordinal	51051	5004	8.93	4.94	3.11	5	0	10	10
lr.cat*	Recoded of lr (missing as category)	Categorical	56055	0	0	3.34	1.81	3	1	6	5
eu.cat*	Recoded of eu (missing as category)	Categorical	56055	0	0	3.21	1.66	3	1	6	5
polint*	Interest in politics	Categorical	55768	287	0.51	2.49	0.95	3	1	4	3
pol.know	Factual political knowledge	Integer	56055	0	0	3.33	1.64	3	0	7	7
class*	Subjective social class	Categorical	54282	1773	3.16	2.88	1.08	3	1	5	4
urban*	Living in urban area	Categorical	55895	160	0.29	1.83	0.38	2	1	2	1
union*	Union membership	Categorical	55202	853	1.52	1.45	0.88	1	1	4	3
occup*	Occupation	Categorical	55433	622	1.11	7.14	5.1	6	1	15	14
relig*	Religious denomination	Categorical	56055	0	0	2.53	1.76	2	1	9	8
churchat	Frequency of church attendance	Ordinal	55024	1031	1.84	2.62	1.52	2	1	6	5
poor*	Reported difficulties paying the bills	Categorical	56055	0	0	1.24	0.43	1	1	2	1
pidstre*	Strength of partisanship	Categorical	49006	7049	12.58	2.05	1	2	1	4	3
elav.bet.lr* (DV)	Electoral availability between blocks (lr)	Categorical	51616	4439	7.92	0.19	0.39	0	0	1	1
elav.bet.mc	Electoral availability between blocks (mc)	Categorical	51616	4439	7.92	0.14	0.35	0	0	1	1
c.idealpt.1d	Voters' ideal points on lr (centered)	Interval	37604	18451	32.92	0	1	-0.01	-	10.41	16.34
c.idealpt.2d	Voters' ideal points on eu (centered)**	Interval	13982	42073	75.06	0	1	0.00	-	8.38	15.51
c.loc.1d	Voters' latent lateral shift lr (centered)	Interval	37875	18180	32.43	0	1	0.04	-	3.91	8.57
c.loc.2d	Voters' latent lateral shift eu (centered)**	Interval	13982	42073	75.06	0	1	0.02	-	3.05	5.97
c.scale.1d	Voters' latent scale distortion lr (centered)	Interval	41817	14238	25.4	0	1.3	0.20	-	2.9	8.64
c.scale.2d	Voters' latent scale distortion eu (centered)**	Interval	17750	38305	68.33	0	1	-0.03	-3.7	3.61	7.31

z.eff.numb	Effective number of electoral parties (standardized)	Interval	54	0	0	0.03	0.97	-0.07	-	1.91	2.22	4.13
z.PartyPol.dalton.1d	Dalton index lr (standardized)	Interval	54	0	0	-0.02	0.94	-0.11	-	2.14	3.07	5.2
z.PartyPol.dalton.ideal.1d	Dalton index on lr parties' ideal points (standardized)	Interval	54	0	0	-0.02	0.99	-0.15	-	1.64	3.94	5.58
z.PartyPol.dalton.2d	Dalton index eu (standardized)	Interval	54	0	0	0.02	0.99	-0.07	-	1.68	2.38	4.06
z.PartyPol.dalton.ideal.2d	Dalton index on eu parties' ideal points (standardized)	Interval	54	0	0	-0.01	0.97	-0.3	-	1.27	4.75	6.02

Appendix E Descriptive plots for voters' between-block electoral availability (left-right)

Figure E.1 — Left-right between-block availability (country averages, EES2009)

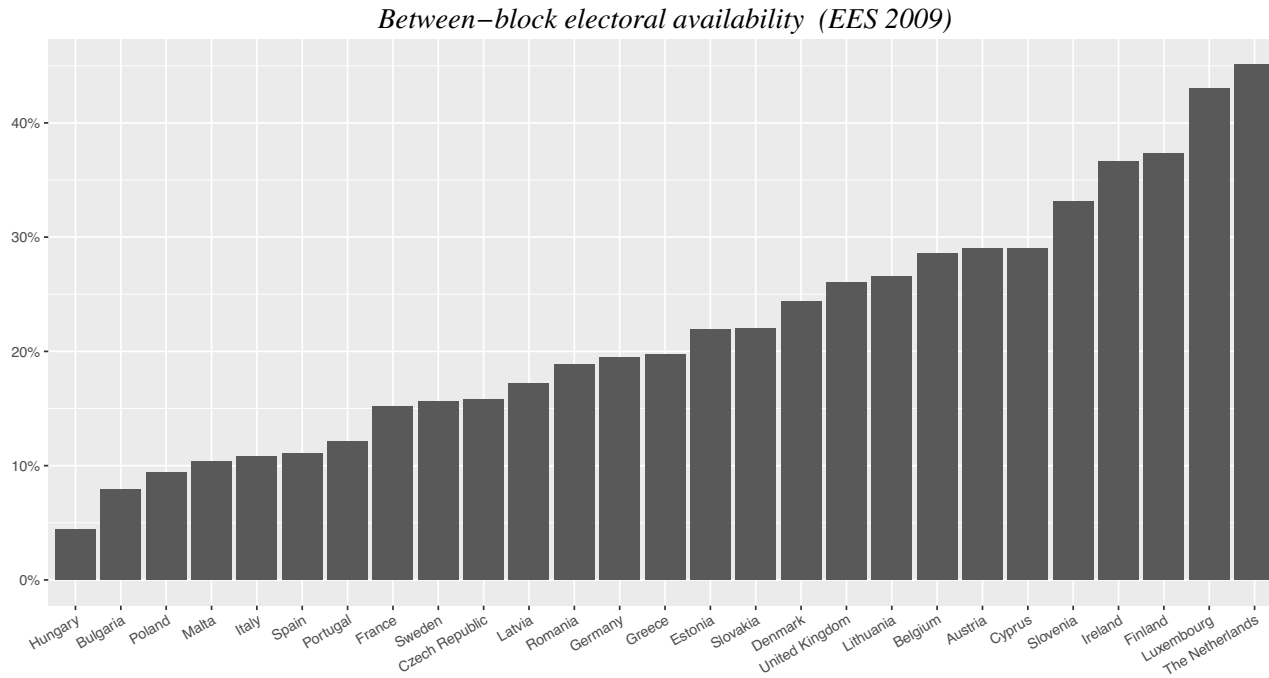


Figure E.2 — Left-right between-block availability (country averages, EES2014)

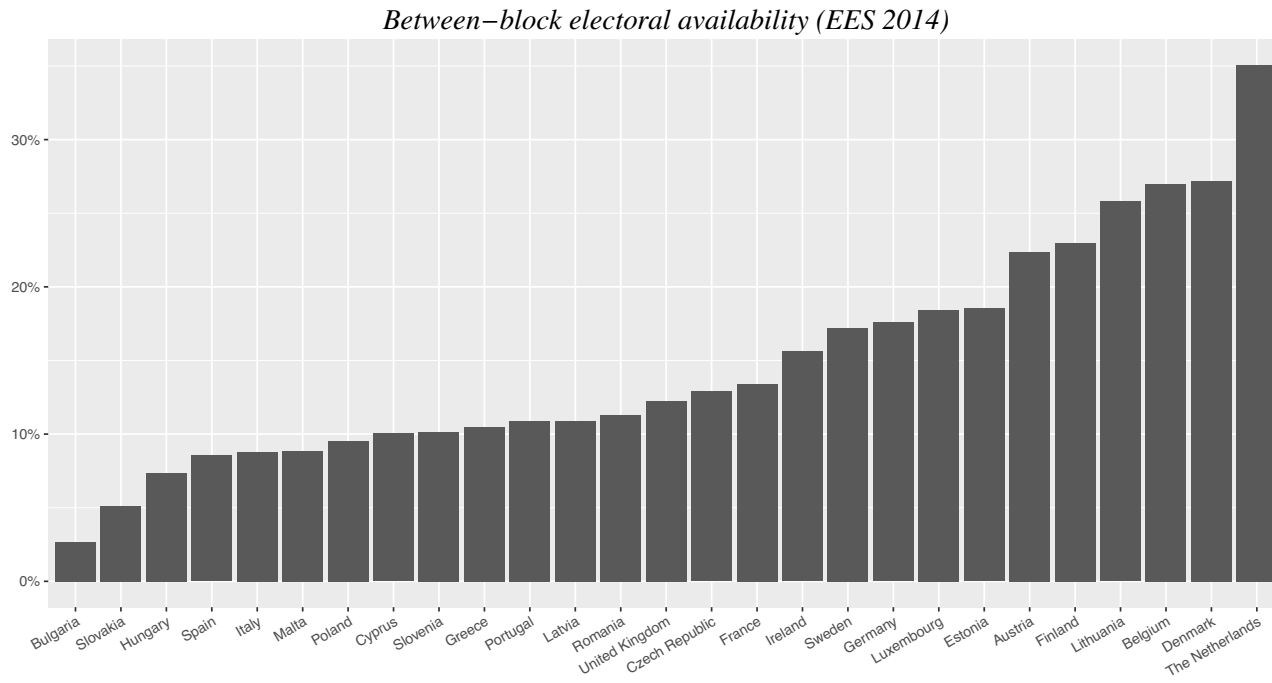
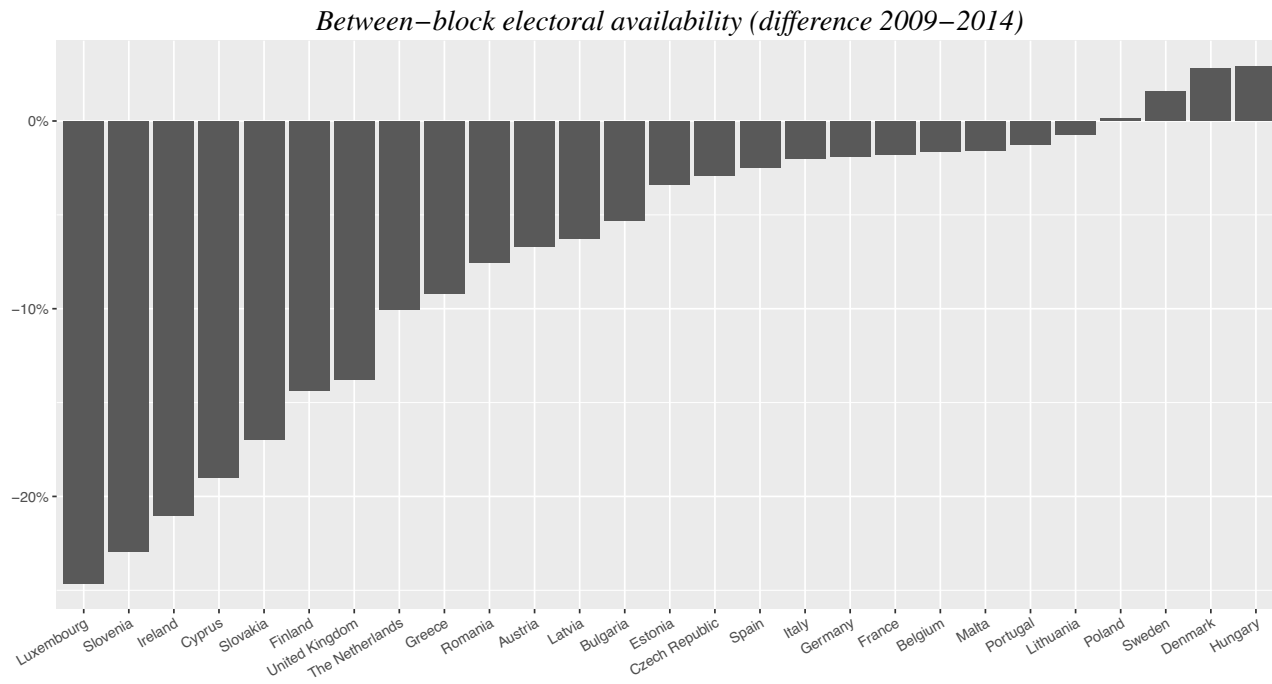


Figure E.3 — Change in left-right average availability (2009-2014)



Appendix F Descriptive plots for voters' between-block electoral availability (mainstream/anti-establishment)

Figure F.1— Mainstream/anti-establishment between-block availability (country averages, EES2009)

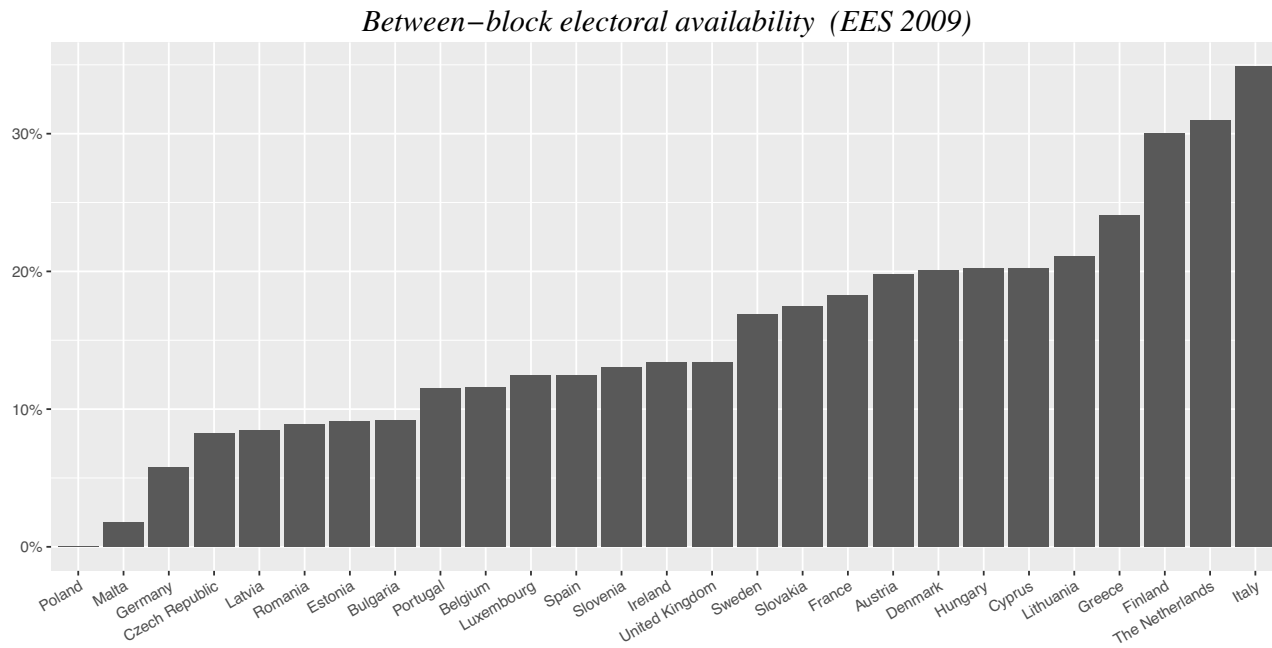


Figure F.2 — Mainstream/anti-establishment between-block availability (country averages, EES2014)

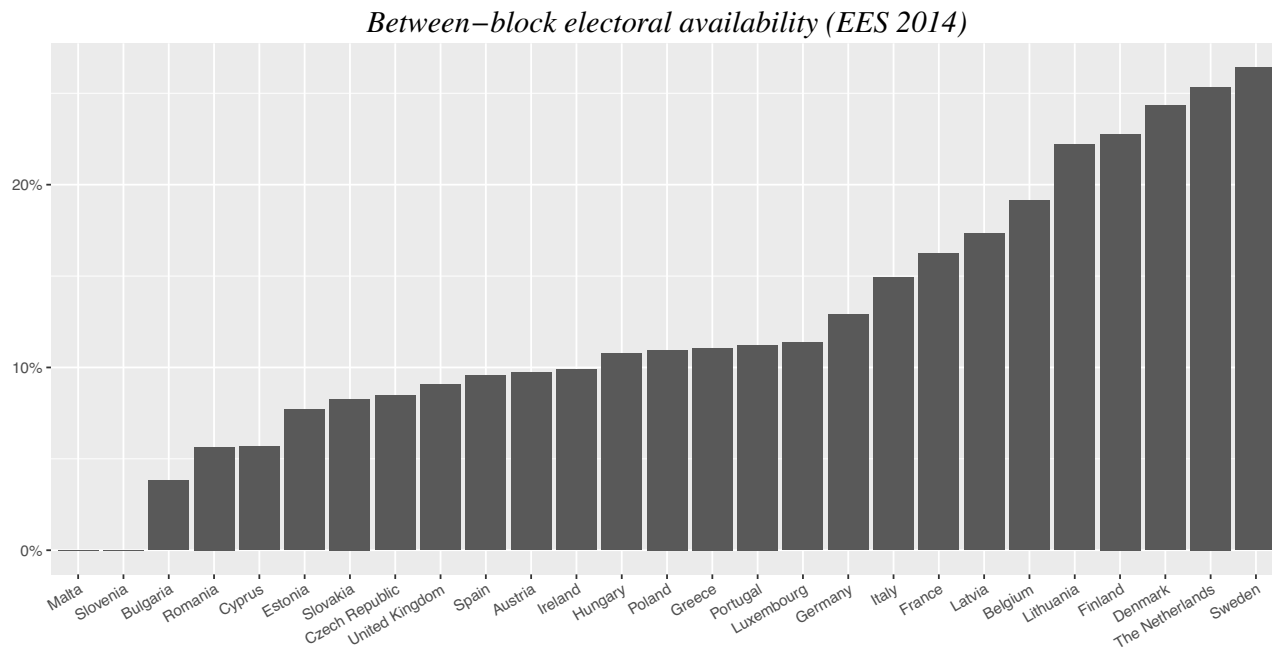
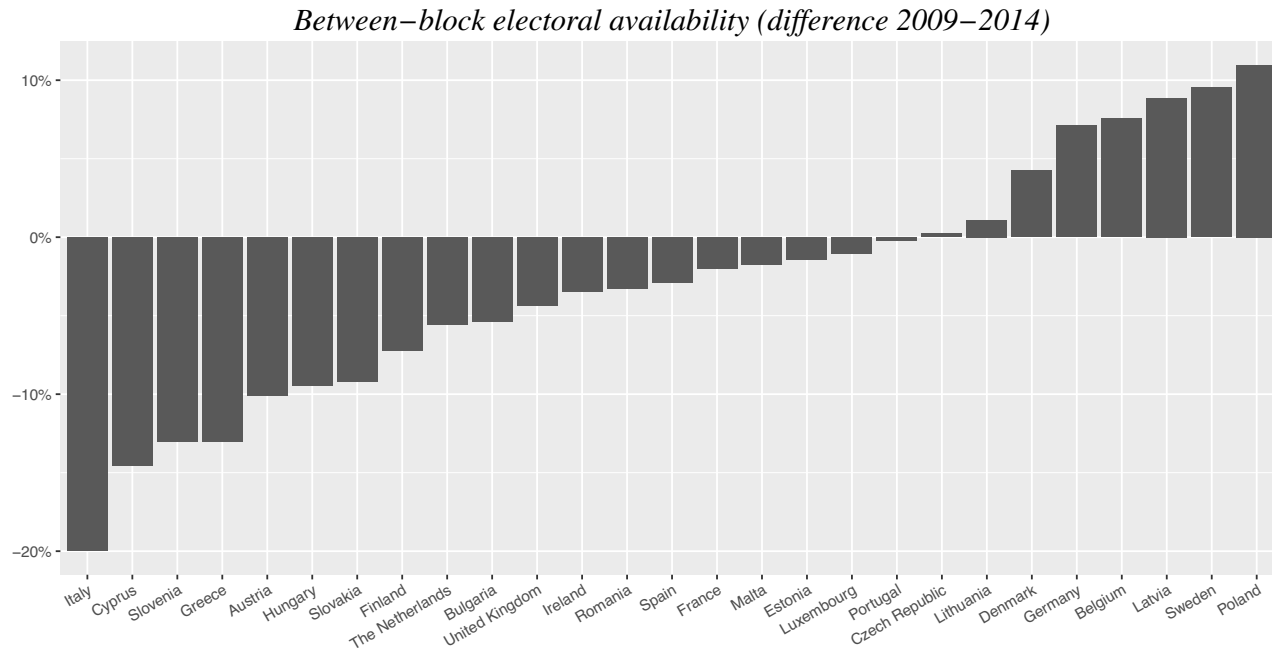


Figure F.3 — Change in mainstream/anti-establishment between-block availability (2009-2014)



Appendix G Regression table for voters' lateral shifts distortions (H1-H4)

Table G.1 — Regression table for voters' lateral shift distortions

	M1 (basic controls)		M2 (Hyp. 1 and 2)		M3 (Hyp. 3)		M4 (Hyp. 4)	
	<i>B (CI)</i>	<i>std. Beta (CI)</i>	<i>B (CI)</i>	<i>std. Beta (CI)</i>	<i>B (CI)</i>	<i>std. Beta (CI)</i>	<i>B (CI)</i>	<i>std. Beta (CI)</i>
Fixed Parts								
Age, ref. cat. (18-25)								
[26-35]	0.02 (-0.03 – 0.07)	0.01 (-0.01 – 0.02)	0.01 (-0.04 – 0.06)	0.00 (-0.01 – 0.02)	0.01 (-0.04 – 0.06)	0.00 (-0.01 – 0.02)	0.01 (-0.04 – 0.06)	0.00 (-0.01 – 0.02)
[36-50]	0.08 (0.03 – 0.13)**	0.04 (0.01 – 0.06)	0.08 (0.03 – 0.13)**	0.04 (0.01 – 0.06)	0.08 (0.03 – 0.13)**	0.04 (0.01 – 0.06)	0.08 (0.03 – 0.13)**	0.04 (0.01 – 0.06)
[51-65]	0.11 (0.06 – 0.16)***	0.05 (0.03 – 0.07)	0.09 (0.05 – 0.14)***	0.04 (0.02 – 0.07)	0.09 (0.04 – 0.14)***	0.04 (0.02 – 0.07)	0.09 (0.04 – 0.14)***	0.04 (0.02 – 0.07)
[66+]	0.03 (-0.02 – 0.08)	0.01 (-0.01 – 0.03)	0.02 (-0.03 – 0.08)	0.01 (-0.01 – 0.03)	0.03 (-0.03 – 0.08)	0.01 (-0.01 – 0.03)	0.02 (-0.03 – 0.08)	0.01 (-0.01 – 0.03)
Female	-0.05 (-0.07 – -0.03)***	-0.03 (-0.04 – -0.02)	-0.04 (-0.07 – -0.02)***	-0.02 (-0.03 – -0.01)	-0.04 (-0.06 – -0.02)***	-0.02 (-0.03 – -0.01)	-0.04 (-0.06 – -0.02)***	-0.02 (-0.03 – -0.01)
Education (ref. quit <21)								
[quit 21- 25]	0.03 (-0.01 – 0.06)	0.01 (-0.00 – 0.03)	0.03 (-0.01 – 0.06)	0.01 (-0.00 – 0.03)	0.03 (-0.00 – 0.06)	0.01 (-0.00 – 0.03)	0.03 (-0.01 – 0.06)	0.01 (-0.00 – 0.03)
[quit > 25]	0.11 (0.08 – 0.15)***	0.05 (0.04 – 0.07)	0.10 (0.07 – 0.14)***	0.05 (0.03 – 0.07)	0.10 (0.07 – 0.14)***	0.05 (0.03 – 0.07)	0.10 (0.07 – 0.14)***	0.05 (0.03 – 0.07)
Self-perceived social class (ref. “Working”)								

Lower-middle	0.04 (0.01 – 0.08)*	0.02 (0.00 – 0.03)	0.05 (0.01 – 0.09)**	0.02 (0.00 – 0.03)	0.05 (0.02 – 0.09)**	0.02 (0.01 – 0.03)	0.05 (0.02 – 0.09)**	0.02 (0.01 – 0.03)
Middle	-0.01 (-0.04 – 0.03)	-0.00 (-0.02 – 0.01)	0.02 (-0.02 – 0.05)	0.01 (-0.01 – 0.03)	0.02 (-0.01 – 0.05)	0.01 (-0.01 – 0.03)	0.02 (-0.01 – 0.06)	0.01 (-0.01 – 0.03)
Upper-middle	-0.00 (-0.04 – 0.04)	-0.00 (-0.02 – 0.02)	0.04 (-0.00 – 0.08)	0.02 (-0.00 – 0.03)	0.04 (-0.00 – 0.08)	0.02 (-0.00 – 0.03)	0.04 (-0.00 – 0.08)	0.02 (-0.00 – 0.03)
Upper	-0.05 (-0.10 – 0.01)	-0.01 (-0.02 – 0.00)	0.00 (-0.05 – 0.06)	0.00 (-0.01 – 0.01)	0.01 (-0.05 – 0.06)	0.00 (-0.01 – 0.01)	0.01 (-0.04 – 0.07)	0.00 (-0.01 – 0.02)
Living urban area	0.05 (0.02 – 0.08)***	0.02 (0.01 – 0.03)	0.05 (0.02 – 0.08)**	0.02 (0.01 – 0.03)	0.05 (0.02 – 0.08)**	0.02 (0.01 – 0.03)	0.05 (0.02 – 0.08)**	0.02 (0.01 – 0.03)
Union (ref. Not member and no member in household)								
Somebody else in hh	0.06 (0.01 – 0.10)**	0.01 (0.00 – 0.02)	0.05 (0.00 – 0.09)*	0.01 (0.00 – 0.02)	0.04 (0.00 – 0.08)*	0.01 (0.00 – 0.02)	0.04 (0.00 – 0.09)*	0.01 (0.00 – 0.02)
I am member	0.10 (0.07 – 0.13)***	0.04 (0.03 – 0.05)	0.08 (0.05 – 0.11)***	0.03 (0.02 – 0.04)	0.08 (0.05 – 0.11)***	0.03 (0.02 – 0.04)	0.08 (0.05 – 0.11)***	0.03 (0.02 – 0.04)
I am member + other hh	0.12 (0.08 – 0.17)***	0.03 (0.02 – 0.04)	0.09 (0.04 – 0.14)***	0.02 (0.01 – 0.03)	0.08 (0.04 – 0.13)***	0.02 (0.01 – 0.03)	0.09 (0.04 – 0.13)***	0.02 (0.01 – 0.03)
Religion (ref. No affiliation)								
Catholic	-0.11 (-0.14 – -0.08)***	-0.05 (-0.07 – -0.04)	-0.08 (-0.12 – -0.05)***	-0.04 (-0.06 – -0.03)	-0.08 (-0.11 – -0.05)***	-0.04 (-0.05 – -0.02)	-0.08 (-0.12 – -0.05)***	-0.04 (-0.06 – -0.03)
Protestant	-0.05 (-0.09 – -0.02)**	-0.02 (-0.03 – -0.01)	-0.03 (-0.07 – 0.00)	-0.01 (-0.02 – 0.00)	-0.02 (-0.06 – 0.01)	-0.01 (-0.02 – 0.01)	-0.03 (-0.07 – 0.01)	-0.01 (-0.02 – 0.00)
Orthodox	-0.02 (-0.08 – 0.05)	-0.01 (-0.03 – 0.02)	-0.02 (-0.09 – 0.05)	-0.01 (-0.03 – 0.02)	-0.01 (-0.07 – 0.06)	-0.00 (-0.02 – 0.02)	-0.01 (-0.08 – 0.05)	-0.00 (-0.03 – 0.02)
Jewish	-0.12 (-0.43 – 0.20)	-0.00 (-0.01 – 0.01)	-0.10 (-0.41 – 0.21)	-0.00 (-0.01 – 0.01)	-0.10 (-0.41 – 0.21)	-0.00 (-0.01 – 0.01)	-0.09 (-0.40 – 0.22)	-0.00 (-0.01 – 0.01)
Muslim	0.12 (-0.00 – 0.23)	0.01 (-0.00 – 0.02)	0.11 (-0.01 – 0.22)	0.01 (-0.00 – 0.02)	0.11 (-0.01 – 0.23)	0.01 (-0.00 – 0.02)	0.11 (-0.01 – 0.22)	0.01 (-0.00 – 0.02)

Appendix

G.3

Hindu	0.15 (-0.22 – 0.52)	0.00 (-0.01 – 0.01)	0.14 (-0.22 – 0.51)	0.00 (-0.01 – 0.01)	0.15 (-0.21 – 0.52)	0.00 (-0.01 – 0.01)	0.14 (-0.23 – 0.51)	0.00 (-0.01 – 0.01)
Buddhist	0.19 (-0.01 – 0.39)	0.01 (-0.00 – 0.02)	0.19 (-0.01 – 0.39)	0.01 (-0.00 – 0.02)	0.20 (-0.00 – 0.40)	0.01 (-0.00 – 0.02)	0.19 (-0.01 – 0.39)	0.01 (-0.00 – 0.02)
Other/DK/Refusal	0.00 (-0.06 – 0.06)	0.00 (-0.01 – 0.01)	0.00 (-0.06 – 0.07)	0.00 (-0.01 – 0.01)	0.01 (-0.05 – 0.07)	0.00 (-0.01 – 0.01)	0.00 (-0.06 – 0.07)	0.00 (-0.01 – 0.01)
Frequency of church attendance	-0.04 (-0.04 – -0.03)***	-0.05 (-0.06 – -0.04)	-0.03 (-0.03 – -0.02)***	-0.04 (-0.05 – -0.03)	-0.02 (-0.03 – -0.02)***	-0.04 (-0.05 – -0.02)	-0.02 (-0.03 – -0.02)***	-0.04 (-0.05 – -0.02)
Poor economic conditions	-0.00 (-0.03 – 0.03)	-0.00 (-0.01 – 0.01)	-0.01 (-0.04 – 0.02)	-0.00 (-0.02 – 0.01)	-0.01 (-0.04 – 0.02)	-0.00 (-0.02 – 0.01)	-0.01 (-0.04 – 0.02)	-0.00 (-0.02 – 0.01)
Factual political knowledge	0.05 (0.03 – 0.06)***	0.04 (0.03 – 0.06)	0.04 (0.03 – 0.06)***	0.04 (0.03 – 0.05)	0.04 (0.03 – 0.05)***	0.04 (0.03 – 0.05)	0.04 (0.03 – 0.05)***	0.04 (0.03 – 0.05)
Reported turnout	0.00 (-0.02 – 0.03)	0.00 (-0.01 – 0.01)	0.00 (-0.02 – 0.03)	0.00 (-0.01 – 0.01)	0.00 (-0.02 – 0.03)	0.00 (-0.01 – 0.01)	0.00 (-0.02 – 0.03)	0.00 (-0.01 – 0.01)
Party identification (ref: independent)								
Sympathiser	-0.02 (-0.04 – 0.01)	-0.01 (-0.02 – 0.00)	-0.02 (-0.05 – 0.00)	-0.01 (-0.02 – 0.00)	-0.03 (-0.05 – 0.00)	-0.01 (-0.02 – 0.00)	-0.00 (-0.05 – 0.04)	-0.00 (-0.02 – 0.02)
Close	-0.04 (-0.07 – -0.01)**	-0.02 (-0.03 – -0.00)	-0.05 (-0.07 – -0.02)**	-0.02 (-0.03 – -0.01)	-0.05 (-0.07 – -0.02)**	-0.02 (-0.03 – -0.01)	-0.01 (-0.06 – 0.04)	-0.00 (-0.03 – 0.02)
Very close	-0.07 (-0.11 – -0.04)***	-0.02 (-0.03 – -0.01)	-0.08 (-0.12 – -0.04)***	-0.03 (-0.04 – -0.01)	-0.08 (-0.12 – -0.04)***	-0.03 (-0.04 – -0.01)	-0.11 (-0.19 – -0.02)*	-0.03 (-0.06 – -0.01)
Left-right ideology [Ref. "Center"]								
Left			0.20 (0.16 – 0.23)***	0.07 (0.06 – 0.08)	0.05 (-0.04 – 0.14)	0.02 (-0.01 – 0.05)	0.14 (0.08 – 0.21)***	0.05 (0.03 – 0.08)
Center-left			0.17 (0.14 – 0.20)***	0.06 (0.05 – 0.07)	0.05 (-0.04 – 0.14)	0.02 (-0.01 – 0.05)	0.15 (0.10 – 0.20)***	0.06 (0.04 – 0.08)
Center-right			0.02 (-0.01 – 0.04)	0.01 (-0.01 – 0.02)	0.01 (-0.07 – 0.10)	0.00 (-0.03 – 0.04)	0.03 (-0.02 – 0.08)	0.01 (-0.01 – 0.03)
Right			-0.10 (-0.13 – -0.07)***	-0.04 (-0.05 – -0.03)	-0.01 (-0.09 – 0.08)	-0.00 (-0.04 – 0.03)	0.01 (-0.05 – 0.06)	0.00 (-0.02 – 0.03)
Interest in politics (ref. Not at all interested)								
Not very interested	0.02 (-0.02 – 0.05)	0.01 (-0.01 – 0.02)	0.01 (-0.02 – 0.05)	0.01 (-0.01 – 0.02)	-0.02 (-0.08 – 0.04)	-0.01 (-0.04 – 0.02)	0.01 (-0.02 – 0.05)	0.01 (-0.01 – 0.02)

Quite interested	0.10 (0.07 – 0.14)***	0.05 (0.03 – 0.07)	0.09 (0.06 – 0.13)***	0.05 (0.03 – 0.06)	0.07 (0.01 – 0.13)*	0.04 (0.01 – 0.06)	0.09 (0.06 – 0.13)***	0.05 (0.03 – 0.06)
Very interested	0.18 (0.13 – 0.22)***	0.07 (0.05 – 0.08)	0.16 (0.12 – 0.20)***	0.06 (0.05 – 0.08)	0.15 (0.08 – 0.23)***	0.06 (0.03 – 0.09)	0.16 (0.12 – 0.20)***	0.06 (0.05 – 0.08)
Interactions [Ideology X interest in politics]								
Left * not very					0.07 (-0.04 – 0.18)	0.01 (-0.01 – 0.03)		
Left * quite					0.15 (0.04 – 0.25)**	0.04 (0.01 – 0.06)		
Left * Very					0.29 (0.17 – 0.40)***	0.06 (0.03 – 0.08)		
Center-left * not very					0.09 (-0.02 – 0.19)	0.02 (-0.00 – 0.04)		
Center-left*+ quite					0.13 (0.03 – 0.24)*	0.03 (0.01 – 0.06)		
Center-left * very					0.18 (0.06 – 0.29)**	0.03 (0.01 – 0.05)		
Center-right * not very					0.03 (-0.07 – 0.13)	0.01 (-0.02 – 0.03)		
Center-right * quite					0.01 (-0.09 – 0.10)	0.00 (-0.03 – 0.03)		
Center-right * very					-0.05 (-0.16 – 0.07)	-0.01 (-0.03 – 0.01)		
Right * not very					0.01 (-0.08 – 0.11)	0.00 (-0.02 – 0.03)		
Right * quite					-0.09 (-0.19 – 0.00)	-0.03 (-0.05 – 0.00)		
Right * very					-0.28 (-0.39 – 0.17)***	-0.06 (-0.08 – 0.03)		
Interactions [Ideology * partisanship]; ref. Center and independent								
Left * sympathizer							-0.01 (-0.10 – 0.07)	-0.00 (-0.02 – 0.02)
Left * close							0.04 (-0.05 – 0.12)	0.01 (-0.01 – 0.03)
Left * very close							0.23 (0.11 – 0.34)***	0.04 (0.02 – 0.06)

Center-left * sympath				0.02 (-0.05 – 0.09)	0.00 (-0.01 – 0.02)
Center-left * close				-0.01 (-0.09 – 0.08)	-0.00 (-0.02 – 0.02)
Center-left * very close				0.08 (-0.04 – 0.21)	0.01 (-0.00 – 0.02)
Center-right * sympath				-0.01 (-0.08 – 0.06)	-0.00 (-0.02 – 0.01)
Center-right * close				-0.05 (-0.13 – 0.03)	-0.01 (-0.03 – 0.01)
Center-right * very close				-0.04 (-0.16 – 0.08)	-0.00 (-0.02 – 0.01)
Right * sympathizer				-0.10 (-0.17 – -0.03)**	-0.03 (-0.04 – -0.01)
Right * close				-0.16 (-0.24 – -0.08)***	-0.04 (-0.06 – -0.02)
Right * very close				-0.17 (-0.28 – -0.07)**	-0.03 (-0.05 – -0.01)
Random parts					
σ^2	0.815	0.805	0.801	0.803	
$\tau_{00, it}$	0.143	0.145	0.144	0.144	
N_{it}	54	54	54	54	
ICC_{it}	0.149	0.153	0.153	0.152	
Observations	32952	32952	32952	32952	
R^2 / Ω_0^2	.185 / .185	.196 / .196	.200 / .200	.198 / .198	
AIC	87045.973	86639.886	86497.357	86585.641	

Notes: DV is the individual lateral location parameter for individuals on the left-right dimension. Hierarchical linear models with random coefficient at the election-level. Table entries are raw and standardized coefficients with confidence intervals. Significance stars: * p<.05 ** p<.01 *** p<.001.

Appendix H Regression table for voters' scale distortions (H5-H8)

Table H.1 — Regression table for voters' scale distortions

	M5 (basic controls)		M6 (Hyp. 7)		M7 (Hyp. 6)		M8 (Hyp. 8)	
	<i>B (CI)</i>	<i>std. Beta (CI)</i>	<i>B (CI)</i>	<i>std. Beta (CI)</i>	<i>B (CI)</i>	<i>std. Beta (CI)</i>	<i>B (CI)</i>	<i>std. Beta (CI)</i>
Fixed Parts								
Age, ref. cat. (18-25)								
[26-35]	0.12 (0.06 – 0.18)***	0.03 (0.02 – 0.05)	0.12 (0.06 – 0.18)***	0.03 (0.02 – 0.05)	0.12 (0.06 – 0.17)***	0.03 (0.02 – 0.05)	0.11 (0.05 – 0.17)***	0.03 (0.01 – 0.04)
[36-50]	0.16 (0.11 – 0.22)***	0.06 (0.04 – 0.08)	0.17 (0.11 – 0.22)***	0.06 (0.04 – 0.07)	0.16 (0.11 – 0.22)***	0.06 (0.04 – 0.07)	0.16 (0.10 – 0.21)***	0.05 (0.03 – 0.07)
[51-65]	0.17 (0.11 – 0.22)***	0.06 (0.04 – 0.08)	0.15 (0.10 – 0.21)***	0.05 (0.03 – 0.07)	0.15 (0.10 – 0.21)***	0.05 (0.03 – 0.07)	0.14 (0.08 – 0.20)***	0.05 (0.03 – 0.07)
[66+]	0.13 (0.07 – 0.19)***	0.04 (0.02 – 0.06)	0.11 (0.05 – 0.17)***	0.04 (0.02 – 0.05)	0.11 (0.05 – 0.17)***	0.04 (0.02 – 0.05)	0.10 (0.04 – 0.16)**	0.03 (0.01 – 0.05)
Female	-0.06 (-0.08 – -0.04)***	-0.02 (-0.03 – -0.01)	-0.05 (-0.08 – -0.03)***	-0.02 (-0.03 – -0.01)	-0.05 (-0.08 – -0.03)***	-0.02 (-0.03 – -0.01)	-0.05 (-0.08 – -0.03)***	-0.02 (-0.03 – -0.01)
Education (ref. quit <21)								
[quit 21- 25]	0.04 (-0.00 – 0.07)	0.01 (-0.00 – 0.03)	0.05 (0.01 – 0.08)*	0.02 (0.00 – 0.03)	0.05 (0.01 – 0.08)*	0.02 (0.00 – 0.03)	0.06 (0.02 – 0.09)**	0.02 (0.01 – 0.04)
[quit > 25]	0.13 (0.09 – 0.17)***	0.05 (0.04 – 0.07)	0.15 (0.11 – 0.19)***	0.06 (0.04 – 0.07)	0.15 (0.11 – 0.19)***	0.06 (0.04 – 0.07)	0.16 (0.12 – 0.20)***	0.06 (0.05 – 0.08)
Self-perceived social class (ref. “Working”)								
Lower-middle	0.14 (0.10 – 0.18)***	0.04 (0.03 – 0.05)	0.15 (0.11 – 0.19)***	0.04 (0.03 – 0.05)	0.15 (0.11 – 0.19)***	0.04 (0.03 – 0.05)	0.16 (0.12 – 0.21)***	0.05 (0.03 – 0.06)

Middle	0.08 (0.04 – 0.12)***	0.03 (0.02 – 0.05)	0.10 (0.07 – 0.14)***	0.04 (0.03 – 0.05)	0.10 (0.07 – 0.14)***	0.04 (0.03 – 0.05)	0.12 (0.08 – 0.16)***	0.04 (0.03 – 0.06)
Upper-middle	0.14 (0.09 – 0.18)***	0.05 (0.03 – 0.06)	0.15 (0.10 – 0.19)***	0.05 (0.03 – 0.06)	0.15 (0.10 – 0.19)***	0.05 (0.03 – 0.06)	0.16 (0.11 – 0.20)***	0.05 (0.04 – 0.07)
Upper	0.08 (0.02 – 0.15)*	0.01 (0.00 – 0.03)	0.07 (0.01 – 0.14)*	0.01 (0.00 – 0.02)	0.07 (0.01 – 0.14)*	0.01 (0.00 – 0.02)	0.07 (0.01 – 0.14)*	0.01 (0.00 – 0.02)
Living urban area	0.06 (0.03 – 0.10)***	0.02 (0.01 – 0.03)	0.05 (0.02 – 0.08)**	0.01 (0.00 – 0.02)	0.05 (0.02 – 0.08)**	0.01 (0.00 – 0.02)	0.06 (0.02 – 0.09)**	0.02 (0.01 – 0.03)
Union (ref. Not member and no member in household)								
Somebody else in hh	0.02 (-0.03 – 0.07)	0.00 (-0.01 – 0.01)	0.01 (-0.04 – 0.06)	0.00 (-0.01 – 0.01)	0.01 (-0.04 – 0.06)	0.00 (-0.01 – 0.01)	0.01 (-0.04 – 0.06)	0.00 (-0.01 – 0.01)
I am member	0.03 (-0.01 – 0.06)	0.01 (-0.00 – 0.02)	0.01 (-0.02 – 0.05)	0.00 (-0.01 – 0.01)	0.01 (-0.02 – 0.05)	0.00 (-0.01 – 0.01)	0.03 (-0.01 – 0.06)	0.01 (-0.00 – 0.02)
I am member + other hh	0.04 (-0.01 – 0.10)	0.01 (-0.00 – 0.02)	0.02 (-0.03 – 0.08)	0.00 (-0.01 – 0.01)	0.02 (-0.03 – 0.08)	0.00 (-0.01 – 0.01)	0.03 (-0.02 – 0.09)	0.01 (-0.00 – 0.02)
Religion (ref. No affiliation)								
Catholic	-0.08 (-0.12 – -0.05)***	-0.03 (-0.04 – -0.02)	-0.05 (-0.08 – -0.01)**	-0.02 (-0.03 – -0.00)	-0.05 (-0.08 – -0.01)**	-0.02 (-0.03 – -0.00)	-0.05 (-0.09 – -0.01)**	-0.02 (-0.03 – -0.00)
Protestant	0.02 (-0.02 – 0.06)	0.01 (-0.01 – 0.02)	0.05 (0.01 – 0.09)*	0.01 (0.00 – 0.03)	0.05 (0.01 – 0.09)*	0.01 (0.00 – 0.03)	0.04 (-0.00 – 0.08)	0.01 (-0.00 – 0.02)
Orthodox	-0.17 (-0.24 – -0.09)***	-0.04 (-0.06 – -0.02)	-0.16 (-0.23 – -0.09)***	-0.04 (-0.06 – -0.02)	-0.16 (-0.24 – -0.09)***	-0.04 (-0.06 – -0.02)	-0.15 (-0.23 – -0.08)***	-0.04 (-0.06 – -0.02)
Jewish	-0.20 (-0.54 – 0.15)	-0.00 (-0.01 – 0.00)	-0.21 (-0.55 – 0.13)	-0.01 (-0.01 – 0.00)	-0.21 (-0.55 – 0.13)	-0.01 (-0.01 – 0.00)	-0.13 (-0.48 – 0.22)	-0.00 (-0.01 – 0.01)
Muslim	-0.28 (-0.42 – -0.15)***	-0.02 (-0.03 – -0.01)	-0.25 (-0.38 – -0.12)***	-0.02 (-0.03 – -0.01)	-0.25 (-0.38 – -0.12)***	-0.02 (-0.03 – -0.01)	-0.28 (-0.42 – -0.15)***	-0.02 (-0.03 – -0.01)
Hindu	-0.28 (-0.68 – 0.13)	-0.01 (-0.01 – 0.00)	-0.26 (-0.66 – 0.14)	-0.01 (-0.01 – 0.00)	-0.26 (-0.66 – 0.13)	-0.01 (-0.01 – 0.00)	-0.21 (-0.63 – 0.20)	-0.00 (-0.01 – 0.00)
Buddhist	0.09 (-0.14 – 0.33)	0.00 (-0.01 – 0.01)	0.08 (-0.15 – 0.31)	0.00 (-0.01 – 0.01)	0.08 (-0.15 – 0.31)	0.00 (-0.01 – 0.01)	0.05 (-0.19 – 0.29)	0.00 (-0.01 – 0.01)
Other/DK/Refusal	-0.05 (-0.12 – 0.02)	-0.01 (-0.02 – 0.00)	-0.03 (-0.10 – 0.04)	-0.00 (-0.01 – 0.01)	-0.03 (-0.10 – 0.04)	-0.00 (-0.01 – 0.01)	-0.03 (-0.10 – 0.04)	-0.00 (-0.01 – 0.00)

Frequency of church attendance	-0.01 (-0.02 – 0.00)	-0.01 (-0.02 – 0.00)	-0.00 (-0.01 – 0.01)	-0.00 (-0.01 – 0.01)	-0.00 (-0.01 – 0.01)	-0.00 (-0.01 – 0.01)	-0.00 (-0.01 – 0.01)	-0.00 (-0.01 – 0.01)
Poor economic conditions	-0.07 (-0.10 – -0.03)***	-0.02 (-0.03 – -0.01)	-0.08 (-0.11 – -0.05)***	-0.03 (-0.04 – -0.02)	-0.08 (-0.11 – -0.05)***	-0.03 (-0.04 – -0.02)	-0.07 (-0.10 – -0.04)***	-0.02 (-0.03 – -0.01)
Reported turnout	0.10 (0.08 – 0.13)***	0.04 (0.03 – 0.05)	0.07 (0.04 – 0.09)***	0.02 (0.01 – 0.03)	0.07 (0.04 – 0.09)***	0.02 (0.01 – 0.03)	0.06 (0.03 – 0.09)***	0.02 (0.01 – 0.03)
Interest in politics (ref. Not at all interested)								
Not very interested	0.10 (0.06 – 0.13)***	0.03 (0.02 – 0.05)	0.07 (0.04 – 0.11)***	0.03 (0.01 – 0.04)	0.07 (0.03 – 0.11)***	0.03 (0.01 – 0.04)	0.06 (0.02 – 0.10)**	0.02 (0.01 – 0.04)
Quite interested	0.23 (0.19 – 0.26)***	0.09 (0.07 – 0.10)	0.17 (0.13 – 0.21)***	0.07 (0.05 – 0.08)	0.17 (0.13 – 0.21)***	0.06 (0.05 – 0.08)	0.15 (0.11 – 0.19)***	0.06 (0.04 – 0.07)
Very interested	0.29 (0.25 – 0.34)***	0.09 (0.07 – 0.10)	0.21 (0.17 – 0.26)***	0.06 (0.05 – 0.07)	0.21 (0.17 – 0.26)***	0.06 (0.05 – 0.08)	0.17 (0.12 – 0.22)***	0.05 (0.04 – 0.07)
Factual political knowledge (ref.: “Low”)								
Average	0.25 (0.22 – 0.28)***	0.10 (0.09 – 0.11)	0.25 (0.22 – 0.28)***	0.10 (0.09 – 0.11)	0.24 (0.19 – 0.29)***	0.09 (0.07 – 0.11)	0.24 (0.19 – 0.30)***	0.09 (0.07 – 0.12)
High	0.45 (0.41 – 0.48)***	0.16 (0.15 – 0.17)	0.45 (0.42 – 0.49)***	0.16 (0.15 – 0.17)	0.52 (0.46 – 0.58)***	0.18 (0.16 – 0.20)	0.52 (0.46 – 0.58)***	0.18 (0.16 – 0.20)
Left-right ideology [Ref. “Center”]								
Left			0.61 (0.58 – 0.65)***	0.17 (0.16 – 0.18)	0.68 (0.61 – 0.75)***	0.19 (0.17 – 0.21)	0.66 (0.59 – 0.73)***	0.19 (0.17 – 0.21)
Center-left			0.33 (0.30 – 0.37)***	0.10 (0.09 – 0.11)	0.34 (0.26 – 0.41)***	0.10 (0.08 – 0.12)	0.31 (0.24 – 0.39)***	0.09 (0.07 – 0.11)
Center-right			0.19 (0.15 – 0.22)***	0.06 (0.05 – 0.07)	0.14 (0.07 – 0.21)***	0.04 (0.02 – 0.06)	0.13 (0.06 – 0.20)***	0.04 (0.02 – 0.06)
Right			0.48 (0.45 – 0.51)***	0.15 (0.14 – 0.16)	0.52 (0.45 – 0.58)***	0.16 (0.14 – 0.18)	0.50 (0.43 – 0.56)***	0.16 (0.14 – 0.18)
Party identification (ref: independent)								
NA/DN							-0.03 (-0.08 – 0.01)	-0.01 (-0.02 – 0.00)
Sympathiser							0.13 (0.10 – 0.16)***	0.05 (0.03 – 0.06)
Close							0.08 (0.05 – 0.12)***	0.03 (0.02 – 0.04)
Very close							0.17 (0.13 – 0.22)***	0.04 (0.03 – 0.05)

Interactions [Ideology X Political knowledge]						
Left * Average knowledge			-0.05 (-0.14 – 0.03)	-0.01 (-0.03 – 0.01)	-0.06 (-0.15 – 0.02)	-0.01 (-0.03 – 0.00)
Left * High knowledge			-0.15 (-0.25 – -0.06)**	-0.02 (-0.04 – -0.01)	-0.16 (-0.26 – -0.06)**	-0.03 (-0.04 – -0.01)
Center-left * Average knowledge			0.03 (-0.05 – 0.12)	0.01 (-0.01 – 0.02)	0.04 (-0.05 – 0.13)	0.01 (-0.01 – 0.03)
Center-left*+ High knowledge			-0.07 (-0.16 – 0.03)	-0.01 (-0.03 – 0.00)	-0.06 (-0.16 – 0.04)	-0.01 (-0.03 – 0.01)
Center-right * Average knowledge			0.10 (0.01 – 0.18)*	0.02 (0.00 – 0.04)	0.10 (0.01 – 0.18)*	0.02 (0.00 – 0.04)
Center-right * High knowledge			-0.00 (-0.09 – 0.09)	-0.00 (-0.02 – 0.02)	-0.01 (-0.10 – 0.09)	-0.00 (-0.02 – 0.02)
Right * Average knowledge			0.00 (-0.07 – 0.08)	0.00 (-0.02 – 0.02)	-0.01 (-0.09 – 0.07)	-0.00 (-0.02 – 0.02)
Right * High knowledge			-0.14 (-0.23 – -0.05)**	-0.03 (-0.04 – -0.01)	-0.14 (-0.23 – -0.05)***	-0.03 (-0.05 – -0.01)
Random parts						
σ^2	1.268	1.221	1.220	1.216		
$\tau_{00, it}$	0.362	0.347	0.347	0.342		
N_{it}	54	54	54	54		
ICC_{it}	0.222	0.221	0.221	0.219		
Observations	39462	39462	39462	39462		
R^2 / Ω_0^2	.243 / .243	.271 / .271	.272 / .272	.274 / .274		
AIC	121702.784	120232.838	120220.811	120107.415		

Notes: DV is the individual lateral distortion parameters for on the left-right dimension. Hierarchical linear models with random coefficient at the election-level. Table entries are raw and standardized coefficients with confidence intervals. Significance stars: * p<.05 ** p<.01 *** p<.001.

Appendix I Polarization and scale distortions (H9-H10) — Left-right

Table I.1 — Regression table of voters' scale distortions as a function of polarization indices (left-right)

	M9 (Dalton index, H9 Left-right)		M10 (Dalton index LR + ENEP index, H9)		M11 (Dalton index on ideal points, H10 Left-right dimension)		M12 (Dalton index on ideal points LR + ENEP index, H10)	
	<i>B (CI)</i>	<i>std. Beta (CI)</i>	<i>B (CI)</i>	<i>std. Beta (CI)</i>	<i>B (CI)</i>	<i>std. Beta (CI)</i>	<i>B (CI)</i>	<i>std. Beta (CI)</i>
Fixed Parts								
Age, ref. cat. (18-25)								
[26-35]	0.12 (0.06 – 0.18)***	0.03 (0.02 – 0.05)	0.12 (0.06 – 0.18)***	0.03 (0.02 – 0.05)	0.12 (0.06 – 0.18)***	0.03 (0.02 – 0.05)	0.12 (0.06 – 0.18)***	0.03 (0.02 – 0.05)
[36-50]	0.17 (0.11 – 0.22)***	0.06 (0.04 – 0.07)	0.17 (0.11 – 0.22)***	0.06 (0.04 – 0.07)	0.17 (0.11 – 0.22)***	0.06 (0.04 – 0.07)	0.17 (0.11 – 0.22)***	0.06 (0.04 – 0.07)
[51-65]	0.15 (0.10 – 0.21)***	0.05 (0.03 – 0.07)	0.15 (0.10 – 0.21)***	0.05 (0.03 – 0.07)	0.15 (0.10 – 0.21)***	0.05 (0.03 – 0.07)	0.15 (0.10 – 0.21)***	0.05 (0.03 – 0.07)
[66+]	0.11 (0.05 – 0.17)***	0.04 (0.02 – 0.05)	0.11 (0.05 – 0.17)***	0.04 (0.02 – 0.05)	0.11 (0.05 – 0.17)***	0.04 (0.02 – 0.05)	0.11 (0.05 – 0.17)***	0.04 (0.02 – 0.05)
Female	-0.06 (-0.08 – -0.03)***	-0.02 (-0.03 – -0.01)	-0.06 (-0.08 – -0.03)***	-0.02 (-0.03 – -0.01)	-0.05 (-0.08 – -0.03)***	-0.02 (-0.03 – -0.01)	-0.05 (-0.08 – -0.03)***	-0.02 (-0.03 – -0.01)
Education (ref. quit <21)								
[quit 21- 25]	0.05 (0.01 – 0.08)*	0.02 (0.00 – 0.03)	0.05 (0.01 – 0.08)*	0.02 (0.00 – 0.03)	0.05 (0.01 – 0.08)*	0.02 (0.00 – 0.03)	0.05 (0.01 – 0.08)*	0.02 (0.00 – 0.03)

[quit > 25]	0.15 (0.11 – 0.19)***	0.06 (0.04 – 0.07)	0.15 (0.11 – 0.19)***	0.06 (0.04 – 0.07)	0.15 (0.11 – 0.19)***	0.06 (0.04 – 0.07)	0.15 (0.11 – 0.19)***	0.06 (0.04 – 0.07)
Self-perceived social class (ref. “Working”)								
Lower-middle	0.15 (0.11 – 0.19)***	0.04 (0.03 – 0.05)	0.15 (0.11 – 0.19)***	0.04 (0.03 – 0.05)	0.15 (0.11 – 0.19)***	0.04 (0.03 – 0.05)	0.15 (0.11 – 0.19)***	0.04 (0.03 – 0.05)
Middle	0.10 (0.07 – 0.14)***	0.04 (0.03 – 0.05)	0.10 (0.07 – 0.14)***	0.04 (0.03 – 0.05)	0.10 (0.07 – 0.14)***	0.04 (0.03 – 0.05)	0.10 (0.07 – 0.14)***	0.04 (0.03 – 0.05)
Upper-middle	0.15 (0.10 – 0.19)***	0.05 (0.03 – 0.06)	0.15 (0.10 – 0.19)***	0.05 (0.03 – 0.06)	0.15 (0.10 – 0.19)***	0.05 (0.03 – 0.06)	0.15 (0.10 – 0.19)***	0.05 (0.03 – 0.06)
Upper	0.07 (0.01 – 0.14)*	0.01 (0.00 – 0.02)	0.07 (0.01 – 0.14)*	0.01 (0.00 – 0.02)	0.07 (0.01 – 0.14)*	0.01 (0.00 – 0.02)	0.07 (0.01 – 0.14)*	0.01 (0.00 – 0.02)
Living urban area	0.05 (0.02 – 0.08)**	0.01 (0.00 – 0.02)	0.05 (0.02 – 0.08)**	0.01 (0.00 – 0.02)	0.05 (0.02 – 0.08)**	0.01 (0.00 – 0.02)	0.05 (0.02 – 0.08)**	0.01 (0.00 – 0.02)
Union (ref. Not member and no member in household)								
Somebody else in hh	0.01 (-0.04 – 0.06)	0.00 (-0.01 – 0.01)	0.01 (-0.04 – 0.06)	0.00 (-0.01 – 0.01)	0.01 (-0.04 – 0.06)	0.00 (-0.01 – 0.01)	0.01 (-0.04 – 0.06)	0.00 (-0.01 – 0.01)
I am member	0.01 (-0.02 – 0.05)	0.00 (-0.01 – 0.01)	0.02 (-0.02 – 0.05)	0.00 (-0.01 – 0.01)	0.01 (-0.02 – 0.05)	0.00 (-0.01 – 0.01)	0.02 (-0.02 – 0.05)	0.00 (-0.01 – 0.01)
I am member + other hh	0.02 (-0.03 – 0.08)	0.00 (-0.01 – 0.01)	0.02 (-0.03 – 0.08)	0.00 (-0.01 – 0.01)	0.02 (-0.03 – 0.08)	0.00 (-0.01 – 0.01)	0.02 (-0.03 – 0.08)	0.00 (-0.01 – 0.01)
Religion (ref. No affiliation)								
Catholic	-0.05 (-0.08 – -0.01)**	-0.02 (-0.03 – -0.00)	-0.05 (-0.08 – -0.01)**	-0.02 (-0.03 – -0.00)	-0.05 (-0.08 – -0.01)**	-0.02 (-0.03 – -0.00)	-0.05 (-0.08 – -0.01)**	-0.02 (-0.03 – -0.00)
Protestant	0.05 (0.01 – 0.09)*	0.01 (0.00 – 0.03)	0.05 (0.01 – 0.09)*	0.01 (0.00 – 0.03)	0.05 (0.01 – 0.09)*	0.01 (0.00 – 0.03)	0.05 (0.01 – 0.09)*	0.01 (0.00 – 0.03)
Orthodox	-0.18 (-0.25 – -0.10)***	-0.05 (-0.07 – -0.03)	-0.18 (-0.25 – -0.11)***	-0.05 (-0.07 – -0.03)	-0.16 (-0.23 – -0.09)***	-0.04 (-0.06 – -0.02)	-0.16 (-0.24 – -0.09)***	-0.04 (-0.06 – -0.02)

Jewish	-0.21 (-0.55 – 0.13)	-0.01 (-0.01 – 0.00)	-0.21 (-0.55 – 0.13)	-0.01 (-0.01 – 0.00)	-0.21 (-0.55 – 0.13)	-0.01 (-0.01 – 0.00)	-0.21 (-0.55 – 0.13)	-0.01 (-0.01 – 0.00)
Muslim	-0.25 (-0.38 – -0.12)***	-0.02 (-0.03 – -0.01)	-0.25 (-0.38 – -0.12)***	-0.02 (-0.03 – -0.01)	-0.25 (-0.38 – -0.12)***	-0.02 (-0.03 – -0.01)	-0.25 (-0.38 – -0.12)***	-0.02 (-0.03 – -0.01)
Hindu	-0.26 (-0.66 – 0.14)	-0.01 (-0.01 – 0.00)	-0.26 (-0.66 – 0.14)	-0.01 (-0.01 – 0.00)	-0.26 (-0.66 – 0.14)	-0.01 (-0.01 – 0.00)	-0.26 (-0.66 – 0.14)	-0.01 (-0.01 – 0.00)
Buddhist	0.08 (-0.15 – 0.31)	0.00 (-0.01 – 0.01)	0.08 (-0.15 – 0.31)	0.00 (-0.01 – 0.01)	0.08 (-0.15 – 0.31)	0.00 (-0.01 – 0.01)	0.08 (-0.15 – 0.31)	0.00 (-0.01 – 0.01)
Other/DK/Refusal	-0.03 (-0.10 – 0.04)	-0.00 (-0.01 – 0.01)	-0.03 (-0.10 – 0.04)	-0.00 (-0.01 – 0.01)	-0.03 (-0.10 – 0.04)	-0.00 (-0.01 – 0.01)	-0.03 (-0.10 – 0.04)	-0.00 (-0.01 – 0.01)
Frequency of church attendance	-0.00 (-0.01 – 0.01)	-0.00 (-0.01 – 0.01)	-0.00 (-0.01 – 0.01)	-0.00 (-0.01 – 0.01)	-0.00 (-0.01 – 0.01)	-0.00 (-0.01 – 0.01)	-0.00 (-0.01 – 0.01)	-0.00 (-0.01 – 0.01)
Poor economic conditions	-0.08 (-0.11 – -0.05)***	-0.03 (-0.04 – -0.02)	-0.08 (-0.11 – -0.05)***	-0.03 (-0.04 – -0.02)	-0.08 (-0.11 – -0.05)***	-0.03 (-0.04 – -0.02)	-0.08 (-0.11 – -0.05)***	-0.03 (-0.04 – -0.02)
Factual political knowledge (ref.: “Low”)								
Average	0.25 (0.22 – 0.28)***	0.10 (0.09 – 0.11)	0.25 (0.22 – 0.28)***	0.10 (0.09 – 0.11)	0.25 (0.22 – 0.28)***	0.10 (0.09 – 0.11)	0.25 (0.22 – 0.28)***	0.10 (0.09 – 0.11)
High	0.45 (0.42 – 0.49)***	0.16 (0.15 – 0.17)	0.45 (0.42 – 0.49)***	0.16 (0.15 – 0.17)	0.45 (0.42 – 0.49)***	0.16 (0.15 – 0.17)	0.45 (0.42 – 0.49)***	0.16 (0.15 – 0.17)
Reported turnout	0.07 (0.04 – 0.09)***	0.02 (0.01 – 0.03)	0.07 (0.04 – 0.09)***	0.02 (0.01 – 0.03)	0.07 (0.04 – 0.09)***	0.02 (0.01 – 0.03)	0.07 (0.04 – 0.09)***	0.02 (0.01 – 0.03)
Left-right ideology [Ref. “Center”]								
Left	0.61 (0.58 – 0.65)***	0.17 (0.16 – 0.18)	0.61 (0.58 – 0.65)***	0.17 (0.16 – 0.18)	0.61 (0.58 – 0.65)***	0.17 (0.16 – 0.18)	0.61 (0.58 – 0.65)***	0.17 (0.16 – 0.18)
Center-left	0.33 (0.30 – 0.37)***	0.10 (0.09 – 0.11)	0.33 (0.30 – 0.37)***	0.10 (0.09 – 0.11)	0.33 (0.30 – 0.37)***	0.10 (0.09 – 0.11)	0.33 (0.30 – 0.37)***	0.10 (0.09 – 0.11)
Center-right	0.19 (0.15 – 0.22)***	0.06 (0.05 – 0.07)	0.19 (0.15 – 0.22)***	0.06 (0.05 – 0.07)	0.19 (0.15 – 0.22)***	0.06 (0.05 – 0.07)	0.19 (0.15 – 0.22)***	0.06 (0.05 – 0.07)
Right	0.48 (0.45 – 0.51)***	0.15 (0.14 – 0.16)	0.48 (0.45 – 0.51)***	0.15 (0.14 – 0.16)	0.48 (0.45 – 0.51)***	0.15 (0.14 – 0.16)	0.48 (0.45 – 0.51)***	0.15 (0.14 – 0.16)
Interest in politics (ref. Not at all interested)								
Not very interested	0.07 (0.04 – 0.11)***	0.03 (0.01 – 0.04)	0.07 (0.04 – 0.11)***	0.03 (0.01 – 0.04)	0.07 (0.04 – 0.11)***	0.03 (0.01 – 0.04)	0.07 (0.04 – 0.11)***	0.03 (0.01 – 0.04)
Quite interested	0.17 (0.13 – 0.21)***	0.07 (0.05 – 0.08)	0.17 (0.13 – 0.21)***	0.07 (0.05 – 0.08)	0.17 (0.13 – 0.21)***	0.07 (0.05 – 0.08)	0.17 (0.13 – 0.21)***	0.07 (0.05 – 0.08)

Very interested	0.21 (0.17 – 0.26)***	0.06 (0.05 – 0.07)	0.21 (0.17 – 0.26)***	0.06 (0.05 – 0.07)	0.21 (0.17 – 0.26)***	0.06 (0.05 – 0.07)	0.21 (0.17 – 0.26)***	0.06 (0.05 – 0.07)
Polarization indices								
Standard Dalton index	0.41 (0.29 – 0.52)***	0.30 (0.21 – 0.39)	0.39 (0.27 – 0.51)***	0.29 (0.20 – 0.38)	-	-	-	-
Dalton index on ideal points	-	-	-	-	-0.06 (-0.22 – 0.10)	-0.04 (-0.16 – 0.07)	-0.03 (-0.19 – 0.12)	-0.03 (-0.14 – 0.09)
Effective Number of Parties	-	-	-0.07 (-0.19 – 0.05)	-0.05 (-0.14 – 0.04)	-	-	-0.16 (-0.31 – -0.00)*	-0.12 (-0.23 – -0.00)
Random parts								
σ^2	1.221		1.221		1.221		1.221	
$\tau_{00, it}$	0.184		0.180		0.343		0.320	
N_{it}	54		54		54		54	
ICC_{it}	0.131		0.129		0.219		0.208	
Observations	39462		39462		39462		39462	
R^2 / Ω_0^2	.271 / .271		.271 / .271		.271 / .271		.271 / .271	
AIC	120201.298		120202.082		120234.319		120232.525	

Notes: DV is the individual scale distortion parameter on the left-right dimension. Hierarchical linear models with random coefficient at the election-level. Table entries are raw and standardized coefficients with confidence intervals. Significance stars: * p<.05 ** p<.01 *** p<.001.

Appendix I Polarization and scale distortions (H9-H10) – EU integration (2009 only)

Table I.2 — Regression table of voters' scale distortions as a function of polarization indices (EU integration, 2009 only)

	M9 (Dalton index, H9)		M10 (Dalton index + ENEP index, H9)		M11 (Dalton index on ideal points, H10)		M12 (Dalton index on ideal points + ENEP index, H10)	
	<i>B (CI)</i>	<i>std. Beta (CI)</i>	<i>B (CI)</i>	<i>std. Beta (CI)</i>	<i>B (CI)</i>	<i>std. Beta (CI)</i>	<i>B (CI)</i>	<i>std. Beta (CI)</i>
Fixed Parts								
Age, ref. cat. (18-25)								
[26-35]	0.19 (0.12 – 0.26)***	0.06 (0.04 – 0.09)	0.19 (0.12 – 0.26)***	0.06 (0.04 – 0.09)	0.19 (0.12 – 0.26)***	0.06 (0.04 – 0.09)	0.19 (0.12 – 0.26)***	0.06 (0.04 – 0.09)
[36-50]	0.16 (0.09 – 0.23)***	0.07 (0.04 – 0.10)	0.16 (0.09 – 0.23)***	0.07 (0.04 – 0.10)	0.16 (0.10 – 0.23)***	0.07 (0.04 – 0.10)	0.16 (0.10 – 0.23)***	0.07 (0.04 – 0.10)
[51-65]	0.14 (0.07 – 0.20)***	0.06 (0.03 – 0.09)	0.14 (0.07 – 0.20)***	0.06 (0.03 – 0.09)	0.14 (0.07 – 0.21)***	0.06 (0.03 – 0.09)	0.14 (0.07 – 0.21)***	0.06 (0.03 – 0.09)
[66+]	0.16 (0.09 – 0.23)***	0.06 (0.04 – 0.09)	0.16 (0.09 – 0.23)***	0.07 (0.04 – 0.09)	0.16 (0.09 – 0.24)***	0.07 (0.04 – 0.09)	0.16 (0.09 – 0.23)***	0.07 (0.04 – 0.09)
Female	-0.02 (-0.05 – 0.00)	-0.01 (-0.03 – 0.00)	-0.02 (-0.05 – 0.00)	-0.01 (-0.03 – 0.00)	-0.02 (-0.05 – 0.00)	-0.01 (-0.03 – 0.00)	-0.02 (-0.05 – 0.00)	-0.01 (-0.03 – 0.00)
Education (ref. quit <21)								

[quit 21- 25]	0.03 (-0.02 – 0.08)	0.01 (-0.01 – 0.04)	0.03 (-0.02 – 0.08)	0.01 (-0.01 – 0.04)	0.03 (-0.02 – 0.08)	0.01 (-0.01 – 0.04)	0.03 (-0.02 – 0.08)	0.01 (-0.01 – 0.04)
[quit > 25]	0.10 (0.05 – 0.15)***	0.05 (0.02 – 0.07)	0.10 (0.05 – 0.15)***	0.05 (0.02 – 0.07)	0.10 (0.05 – 0.15)***	0.05 (0.02 – 0.07)	0.10 (0.05 – 0.15)***	0.05 (0.02 – 0.07)
Self-perceived social class (ref. “Working”)								
Lower-middle	0.06 (0.01 – 0.11)*	0.02 (0.00 – 0.04)	0.06 (0.01 – 0.11)*	0.02 (0.00 – 0.04)	0.06 (0.01 – 0.11)*	0.02 (0.00 – 0.04)	0.06 (0.01 – 0.11)*	0.02 (0.00 – 0.04)
Middle	0.06 (0.03 – 0.10)***	0.03 (0.01 – 0.05)	0.06 (0.03 – 0.10)**	0.03 (0.01 – 0.05)	0.06 (0.03 – 0.10)***	0.03 (0.01 – 0.05)	0.06 (0.03 – 0.10)***	0.03 (0.01 – 0.05)
Upper-middle	0.10 (0.04 – 0.15)***	0.03 (0.01 – 0.05)	0.10 (0.04 – 0.15)***	0.03 (0.01 – 0.05)	0.10 (0.04 – 0.15)***	0.03 (0.01 – 0.05)	0.10 (0.04 – 0.15)***	0.03 (0.01 – 0.05)
Upper	0.05 (-0.07 – 0.16)	0.01 (-0.01 – 0.02)	0.05 (-0.07 – 0.16)	0.01 (-0.01 – 0.02)	0.05 (-0.07 – 0.17)	0.01 (-0.01 – 0.02)	0.05 (-0.07 – 0.17)	0.01 (-0.01 – 0.02)
Living urban area	(Omitted due to perfect multicollinearity)		-	-	-	-	-	-
Union (ref. Not member and no member in household)								
hh	-0.05 (-0.11 – -0.00)*	-0.01 (-0.03 – -0.00)	-0.05 (-0.11 – -0.00)*	-0.01 (-0.03 – -0.00)	-0.05 (-0.10 – -0.00)*	-0.01 (-0.03 – -0.00)	-0.05 (-0.10 – -0.00)*	-0.01 (-0.03 – -0.00)
I am member	-0.04 (-0.08 – 0.00)	-0.01 (-0.03 – 0.00)	-0.04 (-0.08 – 0.00)	-0.01 (-0.03 – 0.00)	-0.04 (-0.08 – 0.00)	-0.01 (-0.03 – 0.00)	-0.04 (-0.08 – 0.00)	-0.01 (-0.03 – 0.00)
I am member + other hh	-0.03 (-0.09 – 0.03)	-0.01 (-0.02 – 0.01)	-0.03 (-0.09 – 0.03)	-0.01 (-0.02 – 0.01)	-0.03 (-0.09 – 0.04)	-0.01 (-0.02 – 0.01)	-0.03 (-0.09 – 0.04)	-0.01 (-0.02 – 0.01)
Religion (ref. No affiliation)								
Catholic	0.06 (0.02 – 0.11)**	0.03 (0.01 – 0.05)	0.06 (0.02 – 0.11)**	0.03 (0.01 – 0.05)	0.06 (0.02 – 0.11)**	0.03 (0.01 – 0.05)	0.06 (0.02 – 0.11)**	0.03 (0.01 – 0.05)
Protestant	0.03 (-0.02 – 0.09)	0.01 (-0.01 – 0.03)	0.03 (-0.02 – 0.09)	0.01 (-0.01 – 0.03)	0.03 (-0.02 – 0.09)	0.01 (-0.01 – 0.03)	0.03 (-0.02 – 0.09)	0.01 (-0.01 – 0.03)

Orthodox	-0.19 (-0.27 – -0.10)***	-0.06 (-0.09 – -0.03)	-0.19 (-0.27 – -0.10)***	-0.06 (-0.09 – -0.03)	-0.19 (-0.28 – -0.10)***	-0.06 (-0.09 – -0.03)	-0.19 (-0.28 – -0.10)***	-0.06 (-0.09 – -0.03)
Jewish	0.13 (-0.25 – 0.50)	0.00 (-0.01 – 0.02)	0.13 (-0.25 – 0.50)	0.00 (-0.01 – 0.02)	0.13 (-0.25 – 0.50)	0.00 (-0.01 – 0.02)	0.13 (-0.25 – 0.50)	0.00 (-0.01 – 0.02)
Muslim	0.00 (-0.17 – 0.17)	0.00 (-0.01 – 0.01)	0.00 (-0.17 – 0.17)	0.00 (-0.01 – 0.01)	-0.00 (-0.17 – 0.17)	-0.00 (-0.01 – 0.01)	-0.00 (-0.17 – 0.17)	-0.00 (-0.01 – 0.01)
Hindu	-0.12 (-0.71 – 0.47)	-0.00 (-0.02 – 0.01)	-0.12 (-0.71 – 0.47)	-0.00 (-0.02 – 0.01)	-0.12 (-0.71 – 0.47)	-0.00 (-0.02 – 0.01)	-0.12 (-0.71 – 0.47)	-0.00 (-0.02 – 0.01)
Buddhist	0.43 (0.01 – 0.84)*	0.01 (0.00 – 0.03)	0.43 (0.01 – 0.84)*	0.01 (0.00 – 0.03)	0.43 (0.01 – 0.85)*	0.01 (0.00 – 0.03)	0.43 (0.01 – 0.85)*	0.01 (0.00 – 0.03)
Other/DK/Refusal	0.01 (-0.07 – 0.09)	0.00 (-0.01 – 0.02)	0.01 (-0.07 – 0.09)	0.00 (-0.01 – 0.02)	0.01 (-0.07 – 0.09)	0.00 (-0.01 – 0.02)	0.01 (-0.07 – 0.09)	0.00 (-0.01 – 0.02)
Frequency of church attendance	-0.01 (-0.02 – 0.00)	-0.02 (-0.03 – 0.00)	-0.01 (-0.02 – 0.00)	-0.02 (-0.04 – 0.00)	-0.01 (-0.02 – 0.00)	-0.02 (-0.03 – 0.00)	-0.01 (-0.02 – 0.00)	-0.02 (-0.03 – 0.00)
Poor economic conditions	-0.09 (-0.14 – -0.03)**	-0.02 (-0.04 – -0.01)	-0.09 (-0.14 – -0.03)**	-0.02 (-0.04 – -0.01)	-0.09 (-0.14 – -0.03)**	-0.02 (-0.04 – -0.01)	-0.09 (-0.14 – -0.03)**	-0.02 (-0.04 – -0.01)
Factual political knowledge (ref.: “Low”)								
Average	0.16 (0.12 – 0.20)***	0.08 (0.06 – 0.10)	0.16 (0.12 – 0.20)***	0.08 (0.06 – 0.10)	0.16 (0.12 – 0.20)***	0.08 (0.06 – 0.10)	0.16 (0.12 – 0.20)***	0.08 (0.06 – 0.10)
High	0.33 (0.29 – 0.37)***	0.16 (0.14 – 0.18)	0.33 (0.29 – 0.37)***	0.16 (0.14 – 0.18)	0.33 (0.29 – 0.38)***	0.16 (0.14 – 0.18)	0.33 (0.29 – 0.38)***	0.16 (0.14 – 0.18)
Reported turnout	0.06 (0.02 – 0.09)***	0.03 (0.01 – 0.04)	0.06 (0.02 – 0.09)***	0.03 (0.01 – 0.04)	0.06 (0.02 – 0.09)**	0.02 (0.01 – 0.04)	0.06 (0.02 – 0.09)**	0.02 (0.01 – 0.04)
Left-right ideology [Ref. “Center”]								
Left	-0.04 (-0.09 – 0.01)	-0.01 (-0.03 – 0.00)	-0.04 (-0.09 – 0.01)	-0.01 (-0.03 – 0.00)	-0.04 (-0.09 – 0.01)	-0.01 (-0.03 – 0.00)	-0.04 (-0.09 – 0.01)	-0.01 (-0.03 – 0.00)
Center-left	0.05 (0.00 – 0.09)*	0.02 (0.00 – 0.03)	0.05 (0.00 – 0.09)*	0.02 (0.00 – 0.03)	0.05 (0.00 – 0.09)*	0.02 (0.00 – 0.03)	0.05 (0.00 – 0.09)*	0.02 (0.00 – 0.03)
Center-right	0.09 (0.04 – 0.13)***	0.03 (0.02 – 0.05)	0.09 (0.04 – 0.13)***	0.03 (0.02 – 0.05)	0.09 (0.04 – 0.13)***	0.03 (0.02 – 0.05)	0.09 (0.04 – 0.13)***	0.03 (0.02 – 0.05)
Right	0.01 (-0.03 – 0.05)	0.00 (-0.01 – 0.02)	0.01 (-0.03 – 0.05)	0.00 (-0.01 – 0.02)	0.01 (-0.03 – 0.05)	0.00 (-0.01 – 0.02)	0.01 (-0.03 – 0.05)	0.00 (-0.01 – 0.02)
Interest in politics (ref. Not at all interested)								
Not very interested	0.04 (-0.02 – 0.09)	0.02 (-0.01 – 0.04)	0.04 (-0.02 – 0.09)	0.02 (-0.01 – 0.04)	0.04 (-0.02 – 0.09)	0.02 (-0.01 – 0.04)	0.04 (-0.02 – 0.09)	0.02 (-0.01 – 0.04)

Quite interested	0.13 (0.07 – 0.18)***	0.06 (0.03 – 0.09)	0.13 (0.07 – 0.18)***	0.06 (0.03 – 0.09)	0.13 (0.07 – 0.18)***	0.06 (0.03 – 0.09)	0.13 (0.07 – 0.18)***	0.06 (0.03 – 0.09)
Very interested	0.23 (0.17 – 0.30)***	0.09 (0.07 – 0.11)	0.23 (0.17 – 0.30)***	0.09 (0.07 – 0.11)	0.23 (0.17 – 0.30)***	0.09 (0.07 – 0.11)	0.23 (0.17 – 0.30)***	0.09 (0.07 – 0.11)
Macro-level variables								
Polarization indices								
Standard Dalton index (EU)	0.30 (0.21 – 0.39)***	0.28 (0.20 – 0.36)	0.34 (0.25 – 0.43)***	0.31 (0.23 – 0.39)	-	-	-	-
Dalton index on ideal points (EU)	-	-	-	-	-0.04 (-0.15 – 0.07)	-0.05 (-0.17 – 0.08)	-0.04 (-0.16 – 0.07)	-0.05 (-0.18 – 0.08)
Effective Number of Parties	-	-	-0.09 (-0.17 – -0.01)*	-0.09 (-0.17 – -0.01)	-	-	0.04 (-0.10 – 0.17)	0.04 (-0.09 – 0.17)
σ^2	0.807		0.807		0.807		0.807	
$\tau_{00, it}$	0.046		0.038		0.122		0.121	
N_{it}	27		27		27		27	
ICC_{it}	0.054		0.046		0.131		0.130	
Observations	16748		16748		16748		16748	
R^2 / Ω_0^2	.194 / .194		.194 / .194		.194 / .194		.194 / .194	
AIC	44104.979		44102.450		44130.908		44132.615	

Notes: DV is the individual scale distortion parameter on the left-right dimension. Hierarchical linear models with random coefficient at the election-level. Table entries are raw and standardized coefficients with confidence intervals. Significance stars: * p<.05 ** p<.01 *** p<.001.

Appendix J Detecting the structure of electoral competition (left-right dimension, H12)

Table J.1 — Bayesian Hierarchical Logit model of left-right between-group electoral availability on left-right polarization indices

DV: $ElectAval_{i,LR}$ Coefficient	Model (13)			Model (14)			Model (15)			Model (16)		
	Posterior Median	CI (lower)	CI (upper)	Posterior Median	CI (lower)	CI (upper)	Posterior Median	CI (lower)	CI (upper)	Posterior Median	CI (lower)	CI (upper)
Individual-level covariates												
Age - ref. category : [18-25]												
Age category [26-35]	-0.13	-0.23	-0.04	-0.13	-0.23	-0.04	-0.14	-0.23	-0.05	-0.16	-0.24	-0.06
Age category [36-50]	-0.14	-0.23	-0.06	-0.14	-0.23	-0.05	-0.15	-0.23	-0.07	-0.16	-0.25	-0.07
Age category [51-65]	-0.27	-0.36	-0.19	-0.28	-0.36	-0.19	-0.28	-0.36	-0.20	-0.31	-0.39	-0.21
Age category [66+]	-0.52	-0.62	-0.43	-0.52	-0.62	-0.43	-0.53	-0.62	-0.44	-0.55	-0.64	-0.45
Female	-0.20	-0.24	-0.15	-0.20	-0.25	-0.16	-0.20	-0.25	-0.15	-0.20	-0.25	-0.15
Education - ref. category : (primary)												
Age stopped education (secondary)	0.01	-0.06	0.08	0.01	-0.07	0.09	0.01	-0.06	0.08	0.02	-0.06	0.10
Age stopped education (tertiary)	0.07	-0.01	0.14	0.06	-0.02	0.14	0.07	-0.01	0.14	0.07	-0.01	0.15
Subjective social class - ref. category : “Working”												
Lower-middle	-0.06	-0.14	0.02	-0.06	-0.13	0.04	-0.06	-0.14	0.03	-0.07	-0.15	0.01
Middle	-0.05	-0.12	0.02	-0.04	-0.10	0.04	-0.05	-0.11	0.03	-0.05	-0.12	0.02
Upper-middle	0.07	-0.01	0.16	0.08	0.01	0.18	0.08	-0.00	0.17	0.09	0.01	0.17
Upper	0.19	0.07	0.30	0.20	0.09	0.32	0.20	0.07	0.31	0.20	0.08	0.32
Living in urban area	0.04	-0.03	0.10	0.03	-0.04	0.10	0.03	-0.04	0.10	0.01	-0.06	0.08
Union Member	0.07	0.01	0.13	0.07	0.01	0.13	0.07	0.01	0.13	0.07	0.01	0.13
Religion - ref. category : “No affiliation”												
Catholic	0.06	-0.01	0.12	0.07	-0.00	0.13	0.06	-0.00	0.13	0.04	-0.03	0.11
Protestant	-0.00	-0.08	0.08	-0.01	-0.08	0.08	-0.01	-0.09	0.08	-0.01	-0.09	0.07
Orthodox	0.16	0.03	0.29	0.18	0.04	0.31	0.16	0.02	0.29	0.15	0.01	0.28

Other/DK/Refusal	0.13	0.02	0.23	0.13	0.02	0.24	0.13	0.02	0.24	0.12	0.01	0.22
Church attendance	0.02	0.00	0.04	0.02	0.00	0.04	0.02	0.00	0.04	0.02	0.00	0.04
Income (difficulty paying the bills)	0.03	-0.03	0.09	0.04	-0.03	0.10	0.04	-0.03	0.10	0.02	-0.05	0.09
Occupation - ref. category : "Retired"												
Professional and technical	-0.09	-0.20	0.02	-0.11	-0.22	0.01	-0.10	-0.22	0.01	-0.10	-0.21	0.01
Higher administrative	-0.13	-0.29	0.02	-0.16	-0.31	0.01	-0.15	-0.31	0.00	-0.14	-0.29	0.01
Clerical	-0.09	-0.19	0.00	-0.11	-0.21	-0.00	-0.11	-0.20	-0.00	-0.10	-0.20	0.01
Sales and service worker	-0.01	-0.13	0.10	-0.04	-0.16	0.08	-0.03	-0.16	0.08	-0.03	-0.14	0.09
Skilled worker	-0.13	-0.24	-0.02	-0.15	-0.26	-0.03	-0.15	-0.27	-0.04	-0.15	-0.27	-0.03
Semi-skilled unskilled farm	-0.06	-0.19	0.06	-0.08	-0.21	0.05	-0.08	-0.21	0.05	-0.09	-0.22	0.04
Farm proprietor/manager	-0.26	-0.43	-0.10	-0.28	-0.41	-0.11	-0.27	-0.42	-0.12	-0.24	-0.43	-0.09
Student/in education	-0.03	-0.11	0.07	-0.05	-0.13	0.05	-0.04	-0.14	0.05	-0.04	-0.13	0.06
Never had job/unemployed/house person	-0.05	-0.14	0.04	-0.06	-0.15	0.03	-0.06	-0.15	0.03	-0.05	-0.14	0.05
Political knowledge - ref. category : "Low"												
Average	-0.04	-0.09	0.01	-0.04	-0.09	0.02	-0.04	-0.09	0.01	-0.03	-0.08	0.03
High	-0.18	-0.25	-0.12	-0.18	-0.25	-0.12	-0.18	-0.25	-0.12	-0.17	-0.23	-0.10
Turnout last elections	0.12	0.07	0.16	0.11	0.06	0.17	0.12	0.06	0.17	0.11	0.06	0.17
Interest in politics - ref. category : "Not at all"												
Not very	0.27	0.20	0.35	0.27	0.20	0.34	0.27	0.19	0.35	0.27	0.20	0.35
Quite	0.38	0.30	0.45	0.38	0.30	0.45	0.38	0.30	0.46	0.39	0.31	0.47
Very	0.31	0.23	0.40	0.32	0.23	0.41	0.32	0.22	0.42	0.33	0.24	0.43
Partisanship - ref. category : "Independent"												
Sympathiser	0.01	-0.05	0.06	0.01	-0.04	0.06	0.01	-0.05	0.06	-0.00	-0.06	0.05
Partisan	-0.22	-0.28	-0.17	-0.22	-0.28	-0.16	-0.23	-0.28	-0.17	-0.24	-0.30	-0.18
Self-reported left-right - ref. category : "Center"												
Left	0.01	-0.06	0.08	0.01	-0.06	0.08	0.01	-0.07	0.08	-0.04	-0.11	0.04

Center-left	0.15	0.08	0.20	0.14	0.07	0.20	0.14	0.07	0.21	0.12	0.06	0.19
Center-right	0.06	-0.01	0.12	0.05	-0.01	0.12	0.06	-0.01	0.12	0.04	-0.02	0.11
Right	-0.25	-0.31	-0.17	-0.24	-0.31	-0.18	-0.24	-0.31	-0.17	-0.25	-0.32	-0.18
DK	-0.35	-0.44	-0.26	-0.34	-0.44	-0.26	-0.34	-0.43	-0.26	-0.36	-0.45	-0.27
General attitude towards EU integration - ref. category : "Middle category"												
Against	-0.08	-0.15	-0.01	-0.08	-0.14	-0.01	-0.08	-0.14	-0.01	-0.07	-0.14	-0.00
Mildly against	-0.01	-0.08	0.06	-0.00	-0.09	0.07	-0.00	-0.08	0.06	0.00	-0.08	0.08
Mild support	0.23	0.16	0.29	0.23	0.16	0.30	0.23	0.16	0.30	0.23	0.16	0.30
Support	0.31	0.25	0.38	0.31	0.25	0.38	0.31	0.25	0.38	0.32	0.26	0.40
DK	-0.04	-0.15	0.07	-0.04	-0.15	0.08	-0.04	-0.16	0.07	-0.03	-0.14	0.09
Macro-level covariates												
Polarization index: standard Dalton (left-right dimension, standardized scores)				-0.23	-0.35	-0.10	-	-	-	-	-	-
Polarization index: Dalton index on ideal points (left-right dimension, standardized scores)				-	-	-	0.07	-0.07	0.22	0.09	-0.06	0.23
Effective Number of Electoral Parties (ENEP, standardized scores)				0.31	0.20	0.43	0.37	0.24	0.48	0.37	0.25	0.49
Eastern European country (dummy)				-0.37	-0.65	-0.13	-0.34	-0.60	-0.10	-0.33	-0.59	-0.06
Year (dummy)				-0.08	-0.13	-0.03	-0.08	-0.14	-0.03	-0.09	-0.14	-0.02
Models' summaries												
Average Posterior Predictive Density	0.19			0.19			0.19			0.19		
log-posterior	-19553.17			-19555.84			-19555.51			-18973.68		
Groups	54			54			54			52		
Observations	43,528			43,528			43,528			42,203		
Posterior sample size	800			800			800			800		

Appendix K Detecting the structure electoral competition (mainstream-challenger dimension, H13)

Table K.1 — Bayesian Hierarchical Logit model of electoral availability on EU integration polarization indices

DV: $ElectAval_{i,MC}$ Coefficient	Model (17)			Model (18)			Model (19)			Model (20)		
	Posterior Median	CI (lower)	CI (upper)	Posterior Median	CI (lower)	CI (upper)	Posterior Median	CI (lower)	CI (upper)	Posterior Median	CI (lower)	CI (upper)
Individual-level covariates												
Age - ref. category : [18-25]												
Age category [26-35]	-0.27	-0.37	-0.17	-0.27	-0.37	-0.17	-0.27	-0.37	-0.17	-0.28	-0.38	-0.18
Age category [36-50]	-0.32	-0.40	-0.22	-0.31	-0.40	-0.22	-0.31	-0.40	-0.22	-0.33	-0.42	-0.24
Age category [51-65]	-0.40	-0.49	-0.31	-0.40	-0.49	-0.31	-0.40	-0.49	-0.31	-0.43	-0.51	-0.34
Age category [66+]	-0.76	-0.87	-0.66	-0.76	-0.86	-0.66	-0.76	-0.87	-0.66	-0.79	-0.90	-0.70
Female	-0.05	-0.09	0.00	-0.04	-0.09	0.00	-0.05	-0.10	0.01	-0.05	-0.10	0.01
Education - ref. category : (primary)												
Age stopped education (secondary)	-0.03	-0.11	0.05	-0.03	-0.12	0.05	-0.03	-0.11	0.04	-0.05	-0.12	0.03
Age stopped education (tertiary)	-0.12	-0.20	-0.03	-0.12	-0.20	-0.03	-0.12	-0.20	-0.03	-0.13	-0.22	-0.04
Subjective social class - ref. category : "Working"												
Lower-middle	-0.14	-0.24	-0.05	-0.14	-0.23	-0.05	-0.14	-0.23	-0.06	-0.15	-0.24	-0.06
Middle	-0.23	-0.31	-0.15	-0.23	-0.30	-0.15	-0.23	-0.31	-0.15	-0.22	-0.30	-0.14
Upper-middle	-0.21	-0.30	-0.11	-0.21	-0.30	-0.10	-0.20	-0.30	-0.11	-0.20	-0.29	-0.10
Upper	-0.18	-0.32	-0.04	-0.18	-0.31	-0.05	-0.18	-0.30	-0.05	-0.18	-0.32	-0.05
Living in urban area	0.09	0.02	0.17	0.09	0.01	0.17	0.09	0.01	0.16	0.11	0.03	0.19
Union Member	0.12	0.06	0.18	0.12	0.05	0.18	0.12	0.05	0.19	0.12	0.05	0.18
Religion - ref. category : "No affiliation"												
Catholic	0.01	-0.07	0.09	0.01	-0.06	0.09	0.01	-0.06	0.09	0.01	-0.07	0.08

Protestant	0.03	-0.06	0.10	0.02	-0.06	0.09	0.02	-0.06	0.09	0.02	-0.06	0.10
Orthodox	0.20	0.06	0.35	0.21	0.08	0.36	0.21	0.07	0.37	0.20	0.05	0.34
Other/DK/Refusal	0.02	-0.09	0.13	0.02	-0.10	0.15	0.01	-0.09	0.12	0.00	-0.12	0.12
Church attendance	-0.02	-0.04	0.00	-0.02	-0.04	0.00	-0.02	-0.04	0.00	-0.02	-0.04	0.01
Income (difficulty paying the bills)	0.06	-0.00	0.13	0.07	0.00	0.14	0.07	-0.00	0.14	0.06	-0.01	0.13
Occupation - ref. category : "Retired"												
Professional and technical	-0.23	-0.36	-0.11	-0.24	-0.36	-0.12	-0.24	-0.37	-0.11	-0.24	-0.37	-0.11
Higher administrative	-0.30	-0.49	-0.12	-0.32	-0.49	-0.14	-0.31	-0.49	-0.11	-0.31	-0.49	-0.14
Clerical	-0.16	-0.27	-0.06	-0.17	-0.27	-0.07	-0.17	-0.28	-0.07	-0.15	-0.26	-0.04
Sales and service worker	-0.16	-0.30	-0.03	-0.17	-0.31	-0.04	-0.17	-0.31	-0.04	-0.17	-0.32	-0.03
Skilled worker	-0.05	-0.17	0.07	-0.05	-0.17	0.07	-0.06	-0.18	0.07	-0.05	-0.17	0.08
Semi-skilled unskilled farm	-0.12	-0.25	0.01	-0.13	-0.26	0.01	-0.13	-0.26	-0.00	-0.13	-0.26	0.01
Farm proprietor/manager	-0.24	-0.42	-0.06	-0.24	-0.40	-0.08	-0.24	-0.40	-0.07	-0.22	-0.39	-0.05
Student/in education	-0.16	-0.28	-0.06	-0.17	-0.27	-0.07	-0.18	-0.27	-0.07	-0.16	-0.26	-0.06
Never had job/unemployed/house person	-0.07	-0.16	0.03	-0.07	-0.17	0.03	-0.07	-0.17	0.03	-0.06	-0.16	0.04
Political knowledge - ref. category : "Low"												
Average	-0.16	-0.22	-0.10	-0.16	-0.22	-0.10	-0.16	-0.22	-0.10	-0.16	-0.22	-0.10
High	-0.33	-0.39	-0.26	-0.33	-0.40	-0.25	-0.32	-0.40	-0.25	-0.32	-0.39	-0.24
Turnout last elections	0.10	0.04	0.15	0.09	0.03	0.16	0.09	0.04	0.15	0.10	0.05	0.16
Interest in politics - ref. category : "Not at all"												
Not very	0.26	0.18	0.34	0.26	0.17	0.35	0.26	0.18	0.34	0.26	0.18	0.34
Quite	0.31	0.23	0.40	0.32	0.23	0.40	0.31	0.22	0.40	0.30	0.22	0.39
Very	0.32	0.22	0.42	0.32	0.23	0.42	0.32	0.21	0.42	0.31	0.22	0.41
Partisanship - ref. category : "Independent"												
Sympathiser	0.10	0.03	0.16	0.10	0.04	0.16	0.10	0.04	0.16	0.10	0.05	0.16
Partisan	-0.01	-0.08	0.06	-0.01	-0.07	0.06	-0.01	-0.07	0.06	-0.01	-0.07	0.05

Self-reported left-right - ref. category : "Center"												
Left	0.72	0.64	0.79	0.71	0.64	0.79	0.71	0.64	0.78	0.68	0.60	0.75
Center-left	0.37	0.29	0.45	0.36	0.29	0.43	0.36	0.30	0.44	0.36	0.28	0.43
Center-right	0.03	-0.04	0.12	0.03	-0.04	0.11	0.04	-0.03	0.11	0.04	-0.03	0.12
Right	0.30	0.22	0.38	0.30	0.23	0.38	0.30	0.23	0.38	0.31	0.24	0.38
DK	-0.18	-0.28	-0.07	-0.18	-0.29	-0.06	-0.18	-0.28	-0.07	-0.17	-0.28	-0.05
General attitude towards EU integration - ref. category : "Middle category"												
Against	0.31	0.24	0.38	0.31	0.24	0.38	0.31	0.25	0.39	0.33	0.26	0.41
Mildly against	0.19	0.10	0.27	0.19	0.11	0.27	0.19	0.11	0.27	0.20	0.12	0.29
Mild support	0.00	-0.08	0.08	0.00	-0.07	0.08	0.01	-0.08	0.09	0.01	-0.07	0.09
Support	0.10	0.02	0.18	0.10	0.03	0.17	0.11	0.03	0.18	0.12	0.04	0.19
DK	0.03	-0.10	0.15	0.03	-0.09	0.15	0.04	-0.09	0.15	0.02	-0.12	0.15
Macro-level covariates												
Polarization index: standard Dalton (EU dimension, standardized scores)				0.10	-0.14	0.42	-	-	-	-	-	-
Polarization index: Dalton index on ideal points (EU dimension, standardized scores)				-	-	-	-0.50	-0.74	-0.30	-0.63	-0.90	-0.38
Effective Number of Electoral Parties (ENEP, standardized scores)				0.45	0.20	0.71	0.58	0.38	0.75	0.61	0.44	0.81
Eastern European country (dummy)				-0.40	-0.83	0.08	-0.08	-0.48	0.32	0.07	-0.34	0.45
Year (dummy)				-0.07	-0.15	0.01	-0.10	-0.17	-0.02	-0.10	-0.19	-0.03
Models' summaries												
Average Posterior Predictive Density	0.15			0.15			0.15			0.15		
log-posterior	-16592.91			-16596.35			-16597.03			-16171.96		
Groups	54			54			54			52		
Observations	43,528			43,528			43,528			42,203		
Posterior sample size	800			800			800			800		

Appendix L The two-stage Bayesian Aldrich-McKelvey model

First-stage: within-country comparability estimating voter' DIF parameters and parties' ideal points

Formula	Explanation
(4.1) $y_{ij}^* = y_j^* + \varepsilon_{ij}$	voters' perceptions
(4.2a) $y_{ij} \sim N(\mu_{ij}, \sigma_{ij}^2); \sigma_{ij}^2 > 0$	voters' perceptions
(4.2b) $\mu_{ij} = a_i + b_i y_j^*; -\infty < a_i, b_i, y_j^* < +\infty$	voters' perceptions (mean)
(4.2c) $\sigma_{ij}^2 = \sigma_i^2 \cdot \sigma_j^2$	voters' perceptions (variance)
(4.3) $\mathcal{L} \equiv p(\mathbf{Y} \boldsymbol{\theta}) \propto \prod_{i=1}^N \prod_{j=1}^J \phi\left(\frac{y_{ij} - a_i - b_i y_j^*}{\sigma_{ij}^2}\right)$	Likelihood function
(4.4) $a_i \sim N(0, 25)$	Priors (voters' DIF)
(4.5) $b_i \sim N(0, 25)$	
(4.6) $y_{jL}^* \sim N(0, 1) \quad \mathbf{1}(-\infty, 0)$	(parties' ideal points)
(4.7) $y_{jR}^* \sim N(0, 1) \quad \mathbf{1}(0, +\infty)$	
(4.8) $y_{jC}^* \sim N(0, 1)$	
(4.9) $\sigma_i^2 \sim U(0, 100)$	(variances)
(4.10) $\sigma_j^2 \sim U(0, 100)$	
(4.11) $\pi(\boldsymbol{\theta} \mathbf{Y}) \propto p(\boldsymbol{\theta}) \cdot L(\mathbf{Y} \boldsymbol{\theta})$	Bayes rule
(4.12) $y_i^* = \frac{y_i - a_i}{b_i}$	Linear transformation

Note: i indexes voters, j political parties. Model explained in Section 4.2.

Second-stage: cross-country comparability estimating country-specific DIF parameters and mapping positions on the European Common Space

Formula	Explanation
(4.13a) $z_{km[j]} \sim N(\eta_{km[j]}, \sigma_{km}^2); \quad \sigma_{km}^2 > 0$	
(4.13b) $\eta_{km[j]} = c_k + d_k z_m^* + \varepsilon_{km}; \quad -\infty < c_i, d_i, z_m^* < +\infty$	party positions (mean)
(4.13c) $\sigma_{km}^2 = \sigma_k^2 \cdot \sigma_m^2$	party positions (variance)
(4.14) $\mathcal{L} \equiv p(\mathbf{Z} \boldsymbol{\theta}) \propto \prod_{j=1}^{J_k} \prod_{k=1}^K \prod_{m=1}^M \phi\left(\frac{z_{km[j]} - c_k - d_k z_m^*}{\sigma_{km}^2}\right)$	Likelihood function
(4.15) $c_k \sim N(0, 25)$	Priors (country DIF)
(4.16) $d_k \sim N(0, 25)$	
(4.17) $z_{mL}^* \sim N(0, 1); \quad \mathbf{1}(-\infty, 0)$	(EP groups)
(4.18) $z_{mR}^* \sim N(0, 1); \quad \mathbf{1}(0, +\infty)$	
(4.19) $z_{mC}^* \sim N(0, 1)$	(variances)
(4.20) $\sigma_k^2 \sim U(0, 100)$	
(4.21) $\sigma_m^2 \sim U(0, 100)$	
(4.22) $\pi(\boldsymbol{\theta} \mathbf{Z}) \propto p(\boldsymbol{\theta}) \cdot L(\mathbf{Z} \boldsymbol{\theta})$	Bayes rule
(4.23) $z_j^* = \frac{z_{jk} - a_k}{b_k}$	Linear transformation

Note: i indexes voters, j political parties, and m political groups in the European Parliament. Model explained in Section 4.2.
