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Identifying Latent Policy Dimensions from Public Opinion Data: An Inductive Approach

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ABSTRACT *A common way of classifying policy dimensions is by means of a two-dimensional model, based on one economic (Left/Right) dimension and one liberal–conservative dimension that Marks et al. (2006) refer to as Tan/Gal. However, as Lipet and Rokkan (1967) note, voter alignments developed in different ways in different European countries, so the dimensions that define the respective policy spaces may vary from country to country. In this paper, I test the two-dimensional model on opinion data from four European territories using confirmatory factor analysis (CFA) and go on to develop alternative “better fit” models using a combination of exploratory factor analysis and CFA. I find that the two-dimensional model is appropriate in some but not all the cases and suggest that a more context-sensitive approach is needed to identify the dimensionality of the policy space.*

Introduction

In this article, I use opinion data from an online application called a voting advice application (VAA) to explore the dimensionality of the political space in four countries and regions in Europe. Recent scholarship has tended to assume that two issue dimensions can adequately define the positions of most European political parties. These are, on the one hand, an economic dimension that distinguishes Left from Right and, on the other, a cultural dimension that separates social liberals and progressives from social conservatives and traditionalists. This two-dimensional model is inherent to the logic of the Chapel Hill expert survey (CHES) of political parties, based at the University of North Carolina, which is probably the best known tool for comparing the ideological positions of European parties (Marks et al. 2006; Bakker et al. 2012; Bakker, Jolly, and Polk 2012).

The present article aims to shed some light on whether or not such a two-dimensional model is the most appropriate way of describing the political space in four rather diverse corners of Europe. Other models of the political space that have

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been proposed include a simple one-dimensional model that pits Left against Right (Sigelman and Yough 1978; Aldrich, Dorobantu, and Fernandez 2010) as well as higher-dimensional models that incorporate three or more dimensions (Warwick 2005). One innovation of this paper is that it aims to test the two-dimensional model using opinion data from ordinary citizens, rather than using data from expert surveys such as Chapel Hill (Marks et al. 2006; Bakker et al. 2012; Bakker, Jolly, and Polk 2012) or manifestos (Budge, Robertson, and Hearl 1987). It adopts a two-stage approach; first the two-dimensional model is tested on the opinion data using confirmatory factor analysis (CFA) and subsequently a more inductive approach using a number of complementary methods is used to refine and, if necessary, overturn this model. In order to show where party supporters are located in the policy space, users who self-identify as such are mapped according to the dimensions in both the original (two-dimensional) model and in the revised model. The four countries or territories that are selected for this study are Catalonia (Spain), Greece, Germany and Bulgaria.

The rest of the paper will proceed as follows. I first give a theoretical overview of the concepts that underpin the notion of a multi-dimensional political space and provide a critical analysis of the two-dimensional model. I then describe the methods I use to investigate whether this model is an appropriate way to define the political space in the four selected territories and, if necessary, to construct more meaningful scales. The subsequent section is devoted to a presentation of the results of this analysis. I end the paper with a short conclusion.

The Dimensionality of the Policy Space

Lipset and Rokkan (1967) argue that four fundamental social cleavages in industrialised societies – centre versus periphery, church versus state, rural versus urban (or land versus industry) and owner versus worker (class cleavage) – formed the basis for the evolution of most European political parties in the nineteenth and early twentieth centuries and came to define the European ideological landscape. In much of Western Europe, industrialisation meant that class-based cleavages between labour and capital or Left and Right provided the main source of conflict.

Lipset (1959) suggests that Western European societies were particularly polarised when the Left–Right cleavage was reinforced by a corresponding secular–religious cleavage (Lipset 1959, 93), leading, in extreme circumstances, to a breakdown of democracy. Specifically he identifies France, Italy, Spain and Austria as countries in which “being Catholic has meant being allied with rightist or conservative groups in politics” (Lipset 1959, 92). However, when secular and religious cleavages are cross-cutting, he argues, the risk of such a breakdown is less. His analysis would suggest, first, that the cleavages that emerged with the “national revolution” (most importantly church versus state) were still relevant in the mid-twentieth century, and second that the two cleavages (Left–Right and secular–religious) may either form a single overarching divide or alternatively constitute separate ideological

dimensions. In the mainly Catholic countries that he identifies, the first of these two alignments is likely to predominate.

During the second half of the twentieth century the secular–religious cleavage began to change as increasing economic affluence and globalisation brought a new set of cultural issues into the political battleground. Inglehart notes the emergence of what he terms post-materialist values amongst the younger generation during the 1960s and 1970s, with the growth of left-libertarian lifestyle movements (Inglehart 1977, 1990, 2008). Flanagan (1987) adapts Inglehart’s model by proposing the emergence of a “new politics” in which the predominant cleavage is one between libertarian (“new Left”) and authoritarian (“new Right”) values, which still co-exists with an “old politics” defined by the divide between the old (economic) Left and the old (economic) Right, based on the role of the state in the economy. Within the “new politics”, libertarian values include lifestyle issues such as the right to abortion, gay liberation, environmentalism and minority rights, while authoritarian values oppose abortion, are anti-feminist and endorse traditional and religious moral values, defence, patriotism and law and order (Flanagan 1987, 1306). In a similar vein, Bornschier (2010) identifies the emergence of a cultural resistance to left-libertarianism during the 1980s and 1990s in defence of the family, tradition and community.

It is these notions of (economic) Left and Right, as well as libertarianism and authoritarianism, which tend to define how we visualise the political landscape in Europe today. Probably the most widely used schema for mapping the political space and political parties is that proposed by Marks et al. (2006), who identify two dimensions that structure competition between political parties: an economic Left/Right dimension that relates to economic redistribution, welfare and state regulation of the economy and a cultural dimension that contrasts green/alternative/libertarian (Gal) values with so-called “Tan” values of traditionalism, authority and nationalism. This second dimension they refer to as “Tan/Gal” and it draws heavily on Inglehart and Flanagan’s notion of “new politics” and the values inherent therein.

The main question that this paper seeks to address is whether such a two-dimensional schema is still fit for purpose in Europe today. First, we need to ask whether it is still relevant, given that it was originally conceived in the 1970s and 1980s in response to the so-called “new Left” movements that had recently emerged. The last decade of the twentieth century and the beginning of the twenty-first have seen very many profound changes in Europe, most notably the collapse of communism and the rapid exposure of the nation state to forces of globalisation that have accelerated the movement of both people (through migration) and ideas (through new forms of media and the Internet), and have exposed the national economy to the forces of global capitalism. Kriesi et al. (2006) have argued that these processes have created a new cleavage between the “winners” and “losers” of globalisation in Europe, and that “losers” have tended to adopt a position of demarcation based on opposition to immigration and European integration. It is possible that these pressures have transformed the dimensional structure of the political space, in particular by giving greater prominence to issues such as immigration, nationalism and multiculturalism

(within the cultural dimension), as well as issues involving protectionism and global capitalism (within the economic dimension).

Second, we need to ask whether or not we can apply this schema uniformly across all political contexts in Europe. Lipset and Rokkan (1967) argue that historically societal cleavages developed in different ways in different European countries, depending on factors such as the existence (or non-existence) of an established national church. As a result, some cleavages that became relevant in some countries were not relevant in others, while two cleavages that reinforced one another in one country may have been cross-cutting in another. There is therefore a possibility that very different dimensional structures emerged in different countries and this divergence will only increase if we extend our research to post-communist, Eastern European countries. These countries have undergone very different processes of nation-state formation and industrialisation and have been subject to very profound social changes during the post-communist period, including a radical restructuring of the economy and a period of “accelerated globalisation” in both cultural and economic terms. On top of any pre-existing cleavages, one could hypothesise that these more recent changes may have produced a schism between “winners” and “losers” more profound than anything observed further West. “Losers” may be expected to resist both economic reform and cultural cosmopolitanism, while “winners” are more likely to embrace both, possibly leading to the association between the economic Right and GAL (and conversely between the economic Left and TAN). Such an association was observed by Marks et al. (2006), who use Chapel Hill party data to show that while in Western Europe most parties belong either in the Right–Tan or Left–Gal quadrants of the map, in (post-communist) Eastern Europe most occupy a position in the Left–Tan or Right–Gal quadrants.

Such cleavage-based contextual variations may determine whether the Left/Right and Tan/Gal dimensions are independent from each other, or whether they form part of a single over-arching dimension. Does not the above-mentioned observation by Marks et al. suggest that in Western Europe we may have a single Left/Right dimension that pits cultural liberals and economic leftists against cultural traditionalists and economic rightists? Or that in Eastern Europe we also have a single overarching dimension, but this time running from the Left–Tan pole to the Right–Gal pole?

Conversely, it is possible also that the political space may be defined by more than two dimensions. Lipset and Rokkan identify four fundamental social cleavages, which may or may not be relevant in any one case; is it not possible, then, that there are a corresponding number of political dimensions in certain cases? In particular, is it not possible that the centre versus periphery cleavage not only remains relevant today, but has also even increased in salience in recent years with the emergence or fortification of pro-autonomy parties in territories such as Scotland, Catalonia, the Basque Country and Belgium?

Finally, it is also quite possible that the dimensions we identify may reflect contemporary policy issues that bear little or no relevance to historical societal cleavages. For example, it is to be expected that the recent economic crisis in Europe will provide the

basis for contentious politics in a number of European countries and may even “crowd out” other more long-standing economic and cultural issues.

It is on the basis of these considerations that the case selection for this study has been made. The four cases have been chosen so as to obtain the greatest possible variation in terms both of cleavage structures and of current policy priorities. The Catalan case was chosen both because it is an example of a centre–periphery struggle and because the legacy of Catholicism allows us to test Lipset’s hypothesis on reinforcing cleavages. The Bulgarian case allows us to assess the impact of the post-communist legacy identified above, and specifically to test any association between the economic Left and the traditionalist (Tan) pole of the cultural dimension (and between the economic Right and Gal). Germany is a case in which it would be expected that the “globalisation” cleavage identified by Kriesi and his colleagues would play an important role. Its status as an advanced industrial country and its open market and borders have exposed it extensively to both cultural and economic globalisation. Finally, Greece is the country in Europe that has experienced most turmoil as a result of the recent economic crisis; if policy dimensions do indeed reflect contemporary policy issues, rather than more long-standing or cleavage-based issues, then we would expect policy issues relating to the crisis and how to respond to it would crowd out issues such as the role of the Church in society or gay rights.

Testing and Identifying Ideological Dimensions on the Basis of Opinion Data

The data used in this paper have been generated by users of VAAs in the four selected territories. VAAs are online questionnaires, deployed before elections, which consist of a set of policy statements to which users express agreement or disagreement. The VAA then attempts to match users with the candidate or party that is closest to them in terms of policy preferences. Hitherto, most literature on VAAs has focused on their design (Walgrave, Nuytemans, and Pepermans 2009; Trechsel and Mair 2011; Louwerse and Rosema 2014) or their potential impact on voters (Fivaz, Pianzola, and Ladner 2010; Marschall and Schultze 2012) or parties (Ramonaitė 2010). However, there is a growing realisation that because VAAs can generate potentially large datasets, the data they provide can be exploited to address some of the more traditional concerns of political science such as voting behaviour and political parties (Wheatley 2012; Wheatley et al. 2014). It is in this direction that this paper is oriented.

The data used in this paper are drawn from five VAAs that were launched in four different territories: in Greece before the two parliamentary elections of 6 May and 17 June 2012,¹ in Catalonia before the election to the parliament of the autonomous region held on 25 November 2012, in Bulgaria before the parliamentary elections of 12 May 2013 and in Germany before the parliamentary elections of 22 September 2013. Users who completed the VAA were requested to provide an opinion on 30 issue statements that covered a wide range of topics, including economic policy, foreign affairs, social policy, law and order, the role of the Church, immigration, environment as well as questions of national sovereignty and/or the rights of

minorities. For each issue statement users could choose from a five-point response scale: “completely agree”, “agree”, “neither agree nor disagree”, “disagree” and “completely disagree”. A user could also indicate “no opinion” (Wheatley 2012).

Respondents were invited to supply additional details, including age, gender, educational attainment, party affiliation (if they had one) and vote intention (if they had already decided how to vote). Users that indicated the same party for both party affiliation and vote intention were identified as party supporters and were later used for party mapping (see below). In all cases a large dataset (>6000 valid entries) was produced. In Table 1, the column on the left shows the total number of entries, while the column on the right shows the number of entries remaining after extensive cleaning. (For details of cleaning see the Supplemental data.)

The model that this paper uses as its starting point – and goes on to analyse critically – is the two-dimensional model described by Marks et al. (2006) and used in the CHES. The CHES asks experts to code political parties on a single Left/Right dimension, on an economic Left/Right dimension and on a Tan/Gal dimension, and in terms of specific policy indicators.² It assumes an a priori model of dimensionality and each of the specific policy indicators seems to be designed to feed into one or other pre-defined dimension: economic Left/Right, Tan/Gal or European integration. Bakker, Jolly, and Polk (2012) identify subsets of these indicators that “belong” to each dimension: they attribute improving public services versus reducing taxes, deregulation of markets and redistribution of wealth to the economic dimension; and civil liberties versus law and order, social lifestyle (e.g. homosexuality), the role of religious principles in politics, immigration policy, integration of asylum seekers, rural versus urban interests, cosmopolitanism versus nationalism, decentralisation to regions/localities, international security and peacekeeping missions and ethnic minorities to the Tan/Gal dimension. They also attribute another series of Europe-related policy indicators to a third “European” dimension, which will not be considered in this study.

The first step in the analysis is to assign to every policy statement in each of the five VAAs one of 30 distinct policy categories.³ These categories are then grouped first into the policy fields defined in the CHES and then into the broader ideological scales of economic Left/Right and Tan/Gal based on the attributions of Bakker, Jolly and Polk. Details of how this is done are given in the Supplemental data.

Table 1. Size of datasets

Territory	All entries	Clean entries
Bulgaria	10,474	8579
Catalonia	35,357	27,475
Germany	157,195	113,949
Greece (May 2012)	92,006	72,768
Greece (June 2012)	9542	6524

Having categorised every item in all five VAAs in this way and having assigned them either one or other dimension or none at all, I then perform a CFA on the five datasets to test the *a priori* model of dimensionality, i.e. the hypothesis that the two pre-defined dimensions adequately describe the political space in the four territories. Each of the datasets includes *all* user responses to the policy statements in the respective VAA that are deemed valid after cleaning.

In terms of the outputs obtained from CFA, the analysis produces a number of goodness-of-fit indices, including the root mean square error of approximation (RMSEA), the comparative fit index (CFI) and the Tucker-Lewis Index (TLI). Researchers often disagree as to what constitutes a good or adequate fit in terms of the thresholds of these indices. The thresholds I will use for the purpose of this paper are mid-way between the most stringent (RMSEA < 0.05, CFI > 0.95, TLI > 0.95) and the most permissive (RMSEA < 0.1, CFI > 0.90, TLI > 0.90) criteria. Based on guidelines suggested by Hu and Bentler (1999), Browne and Cudeck (1993) and Brown (2006), I propose that there is an adequate fit if RMSEA is less than 0.08, and both the CFI and TLI are more than or near 0.95.

Given the fact that, in most cases, CFA shows that the two pre-defined dimensions do not adequately define the political space, and given the acknowledgement by Marks et al. that the Tan/Gal dimension in particular may incorporate different issues in different contexts (Marks et al. 2006, 157), I then adopt an alternative, more inductive method. This method, suggested by Gerbing and Anderson (1988), entails first using exploratory factor analysis (EFA) as a preliminary technique to identify latent dimensions, then to use CFA to evaluate and, if necessary, refine the scales identified by EFA.

For both methods, I check that each scale exhibits what is known as monotonicity, which means that as the value of the latent factor increases or decreases, so does the probability of endorsing an individual item associated with that factor (Sijtsma and Molenaar 2002). With the inductive method I drop items that violate the monotonicity principle. The way this analysis is carried out is explained in the Supplemental data.

Having identified the groups of items that are supposed to measure the same latent dimension, (a) based on defining the dimensions *ex ante* and (b) inductively, I then compute the position of each respondent with respect to each dimension for both models based on their responses to the items and normalise the scores in such a way that they vary between 0 and 1. Supporters of the most important political parties⁴ are then identified and the mean positions of each group of party supporters along each dimension are calculated. Each group of party supporters is then mapped in such a way that both the mean position of party supporters as well the associated contour lines that enclose 50% of them are plotted.⁵ As a final step, I compare the two sets of party plots with a third that is based on the 2010 CHES positioning of the political parties with respect to economic Left/Right and Tan/Gal dimensions in each country. This is to test how both our scales compare with more established measures of party positions in terms of how they position parties and their supporters.

Using VAA-generated data to explain political phenomena may invite the criticism that any conclusions one may draw are not valid because the sample of VAA users is

unrepresentative. Typically, VAAs are accessed by a self-selected sample of well-educated, young and left-leaning voters (Wheatley et al. 2014). I attempt to correct for this bias by repeating the CFA on new samples that are randomly selected from the datasets according to vote intention in such a way as to approximate the voting preferences of the electorate. The goodness-of-fit indices with respect to the new samples are little changed from the original datasets, suggesting that the models are rather robust. The details and results of this procedure are explained in the Supplemental data.

Policy Dimensions and Party Mapping

It is now time to test our models on the datasets generated by the VAAs. Table 2 gives the goodness-of-fit indices obtained if we apply CFA to the five datasets using the pre-defined Left/Right and Tan/Gal dimensions. The number of issue statements for each dataset that violate the monotonicity principle is also shown, as is the covariance between the two dimensions. In most cases, we can only conclude that the fit is

Table 2. Fit indices, covariances and monotonicity violations using ex ante defined dimensions

Entity	Indices	Values
Bulgaria	CFI	0.772
	TLI	0.735
	RMSEA	0.098
	Covariance*	−0.063
	No. of monotonicity violations	2
Catalonia	CFI	0.838
	TLI	0.812
	RMSEA	0.107
	Covariance*	0.250
	No. of monotonicity violations	1
Germany	CFI	0.921
	TLI	0.905
	RMSEA	0.072
	Covariance*	0.175
	No. of monotonicity violations	3
Greece (May)	CFI	0.851
	TLI	0.832
	RMSEA	0.114
	Covariance ^a	0.241
	No. of monotonicity violations	2
Greece (June)	CFI	0.853
	TLI	0.836
	RMSEA	0.118
	Covariance ^a	0.125
	No. of monotonicity violations	0

^aFor covariances a right-wing position on the economic scale and a Tan position on the Tan/Gal scale assume positive values; left and Gal assume negative values.

poor. Only in the case of Germany do the fit indices approach anything that may be considered acceptable, and in this case both dimensions contain elements that violate the principle of monotonicity. Overall, the pre-defined Left/Right and Tan/Gal dimensions are a poor way of representing the data.

The scree plots generated from each dataset when EFA is applied suggest that a two-dimensional model is only appropriate in three of our four cases (for the scree plots and what they signify, see the Supplemental data, especially Figure A1). The positions of the “elbow” in the scree plots suggest that the German dataset, the two Greek datasets and the Catalonia dataset conform to a two-dimensional model, while the Bulgaria dataset suggests a three-dimensional model. Applying CFA inductively to refine the (two- or three-dimensional) scales identified by EFA, we are left with the scales given in Table 3. Table 3 provides the composition of these scales in terms of policy categories (defined in the Supplemental data) as well as the goodness-of-fit indices for the new model and the covariances between the dimensions. The numbers shown after each policy category (*m/n*) represent the number of issues (*m*) belonging to the category that are included in the given dimension as well as the total number of items in the VAA questionnaire that belong to the category (*n*). Both the factor loadings for EFA and the individual items left in each scale are given in Tables A1–A5 of the Supplemental data, with the loadings of the latter emphasised in bold. It should be noted that the goodness-of-fit indicators in Table 3 represent a significant improvement on those generated by the a priori model (Table 2).

Looking at the factor structure in Table 3, we see that in the Greek, German and Bulgarian cases the issues that load onto each dimension suggest that there is one economic dimension that is very similar to what the literature proposes as economic Left/Right and one cultural dimension that bears a fair resemblance to what Marks et al. refer to as the Tan/Gal dimension. As Marks et al. suggest, the cultural dimension is rather varied in terms of the issues that belong to it; in Germany in addition to gay rights – a typical Tan/Gal issue – the other items refer to immigration and EU integration, including one on Turkish accession to the EU and one on the issuance of Eurobonds to help support indebted, mainly Southern European countries; in Greece the role of the national Church as well as issues of the defence of the nation play a role, while in Bulgaria the emphasis is on the role of national minorities. In all three cases, the economic dimension consists of typical Left/Right issues such as the role of the state, public services and redistribution, although in Greece and Bulgaria issues of foreign policy (North Atlantic Treaty Organisation membership in Greece and EU integration in both countries) and national economic sovereignty (in Bulgaria, on foreign ownership of Bulgarian enterprises) also loaded onto this dimension. In Bulgaria, a third dimension appeared relevant and this relates to the relationship to the political elite; issues that load onto this dimension include the right to deselect members of parliament, the adoption of a new constitution, the adoption of a new majoritarian voting system (to privilege candidates over parties) and making lawmakers criminally responsible for their political decisions. In short, it represents a measure of values that could be described as “populist”.

Table 3. Factor structure and fit indices using inductively defined dimensions

Entity	First dimension	Second dimension	Third dimension	Fit indices
Bulgaria	<i>Economic dimension</i> Debt repayment/austerity/public sector (2/2); managing inequality (1/1); state regulation versus privatisation (2/3); foreign investment/protectionism (1/1); environment (1/2); EU integration (1/2)	<i>Cultural dimension</i> Gay rights (1/1); rights of ethnic and religious minorities (3/3); Turkey EU accession (1/1)	<i>Populist dimension</i> Constitutional matters (3/4); misc. (1/1)	CFI = 0.953 TLI = 0.944 RMSEA = 0.059 Cov. (1–2): -0.112^a Cov. (1–3): -0.184^a Cov. (2–3): 0.125^a
Catalonia	<i>Broad Left–Right dimension</i> State regulation versus privatisation (2/2); debt repayment/austerity/public sector (1/1); environment (1/1); labour rights (1/1); privatisation of services (1/1); tax, spending and benefits (1/3); public services (1/1); restrict demonstrations (1/1); immigration (1/2); role of church (1/2); gay rights (1/1)	<i>Autonomy dimension</i> Autonomy (2/4); independence (3/3); separate nationhood (1/1); language rights (1/1)		CFI = 0.950 TLI = 0.944 RMSEA = 0.079 Cov. (1–2): -0.071^a
Germany	<i>Economic dimension</i> Public services (2/2); environment (1/3); managing inequality (2/4); tax, spending and benefits (2/3); labour rights (1/1); misc. (1/3)	<i>Cultural dimension</i> EU integration (1/3); Turkey EU accession (1/1); gay rights (1/1); asylum (1/1)		CFI = 0.950 TLI = 0.939 RMSEA = 0.063 Cov. (1–2): 0.153^a

Greece (May)	<i>Economic dimension</i> Debt repayment/austerity/public sector (5/6); state regulation versus privatisation (1/1); privatisation of services (1/1); EU integration (1/2); public services (2/2); labour rights (1/1); misc (1/2)	<i>Cultural dimension</i> Ethnic cohabitation/multiculturalism (1/1); law and order/security (1/3); defence (1/1); role of Church (1/1)	CFI = 0.952 TLI = 0.944 RMSEA = 0.076 Cov. (1–2): 0.004 ^a
Greece (June)	<i>Economic dimension</i> Labour rights (1/1); public services (2/2); privatisation of services (1/1); debt repayment/austerity/public sector (3/6); foreign policy orientation (1/3); managing inequality (1/1); state regulation versus privatisation (1/1); EU integration (1/2); misc. (2/2)	<i>Cultural dimension</i> Ethnic cohabitation/multiculturalism (2/2); law and order/security (1/2); defence (1/1); gay rights (1/1); role of church (1/1)	CFI = 0.969 TLI = 0.965 RMSEA = 0.057 Cov. (1–2): 0.028 ^a

^aFor covariances a right-wing position on the economic scale and a traditionalist position on the cultural scale assume positive values; left and progressive positions assume negative values. On the broad Left–Right scale, right-wing positions assume positive values. On the autonomy scale, pro-autonomy values assume positive values. On the populism scale, populist positions assume positive values.

The outlier here is Catalonia. The two relevant dimensions identified from the Catalonia dataset are not an economic Left/Right dimension and a Tan/Gal dimension, but a broad Left/Right dimension that covers both economic and cultural issues and pits socially liberal economic leftists against socially conservative economic rightists and an extra dimension that is defined by issues relating to the autonomy and/or independence of Catalonia with respect to Spain and the existence of Catalonia as a separate nation. The inclusion of both economic Left/Right and Tan/Gal into a single overarching dimension is consistent with the findings of Bakker, Jolly and Polk, whose exploration of dimensionality based on the CHES also suggests the existence of a single left-libertarian/right-authoritarian dimension in Spain (Bakker, Jolly, and Polk 2012, 227).

Finally, let us compare the ex ante models and the inductive models in terms of their capacity to represent the positions of the supporters of political parties. Figure 1 shows the mean positions of each group of party supporters with respect to both sets of

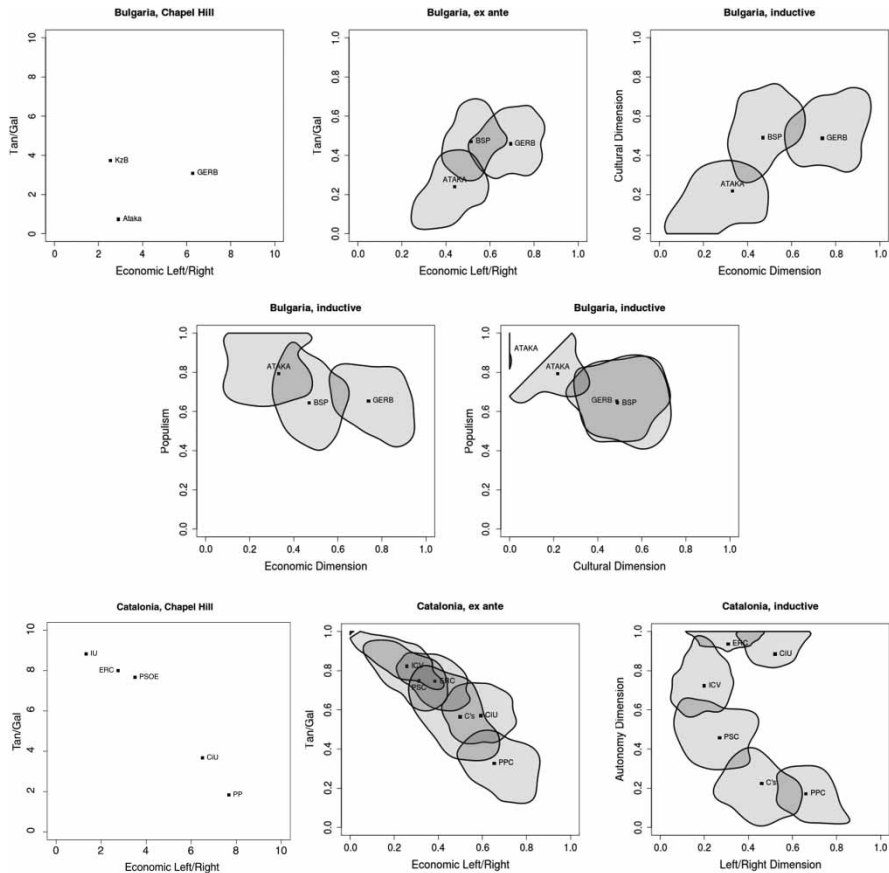


Figure 1. Party maps.

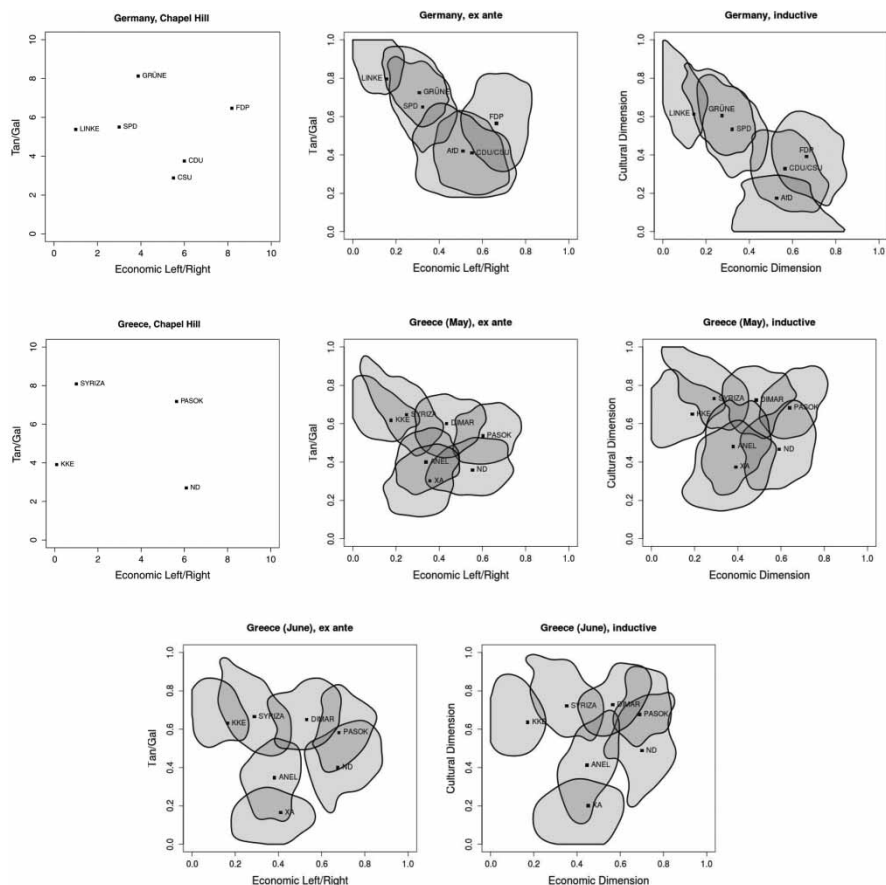


Figure 1. Continued.

dimensions as well as the contour lines that enclose 50% of the supporters of each party. For the party abbreviations used in Figure 1, see the Glossary in the Supplemental data. Figure 1 also includes maps showing the mean positions given by a panel of experts to these parties in the 2010 CHES. We see that in the Greek maps there is very little difference in the positions of party supporters based on pre-defined dimensions compared with their positions with respect to the inductively defined dimensions, suggesting that while the predefined scales may not perform so well if subjected to the rigours of CFA, they are more than adequate in terms of distinguishing between the supporters of the political parties.⁶ Irrespective of which set of dimensions is used, however, supporters of the Communist party of Greece (KKE) that completed the VAA proved to be significantly more liberal culturally than the position of the party according to the CHES panel. This may reflect a generational divide between younger and older KKE supporters and cautions against our extrapolating the data beyond the group of

party supporters in our sample and claiming that they represent the position of all party supporters (or worse still, the entire party).

At first sight, the German maps also appear to show a rather close correspondence between the positions ascribed to party supporters based on the *ex ante* dimensions and those ascribed on the basis of the inductively defined dimensions. However, several rather subtle differences stand out. First, the relative positions of the Christian Democratic Union/Christian Social Union (CDU/CSU) and the Free Democratic Party are further apart, particularly in terms of the cultural dimension, when placed on the *ex ante* scales (both my own and those of CHES) as compared with their locations on the inductively defined scales. Second, and even more notably, supporters of the Alternative for Germany (AfD) occupy a clearly “culturally conservative” niche when plotted with respect to the inductively defined dimensions. However, the *ex ante* defined dimensions (our own, as AfD did not exist when the CHES was carried out) fail to distinguish clearly between AfD supporters and CDU/CSU supporters. Possibly this is because the traditional Tan/Gal dimension tends to focus more on lifestyle issues, while a growing and possibly more relevant divide is between those who are comfortable about immigration, multiculturalism and further European integration and those who are not. This divide may reflect that identified by Kriesi et al. (2006) between “winners” and “losers” of globalisation, which may be replacing – or at least transforming – the divide between Inglehart’s “materialists” and “post-materialists” or Flanagan’s “libertarians” and “authoritarians”.

The Bulgarian maps are, on the face of it, very different because there are three, rather than two, inductively defined dimensions. However, we can see from the maps that the third of these dimensions (“populism”) does not tell us much about the relative positions of party supporters, except that supporters of the populist, ultra-nationalist party Ataka are significantly more populist than the others. If we take only the two “traditional” economic and cultural dimensions, we see that the inductively defined dimensions highlight the differences between the three parties much more effectively than the *ex ante* defined dimensions. Both of these maps differ from the map defined by the CHES insofar as the latter places the Coalition for Bulgaria (KzB) furthest to the left economically, while the VAA-based maps place Ataka to the left of the Bulgarian Socialist Party (the BSP, which is the main party within the KzB) in economic terms. We can only speculate that this is because the (predominantly young) BSP supporters who used the VAA are not as economically leftist as the official party position.

Finally, the case in which the inductively defined dimensions position the parties *far* more effectively than the economic Left/Right and Tan/Gal dimensions used in both the CHES and in our own *ex ante*-based mapping is that of Catalonia. This is because in Catalonia the economic Left/Right and Tan/Gal scales form a single dimension and so the *ex ante* defined maps only capture one element of inter-party competition. The other critical dimension is the attitude towards Catalan autonomy and independence. It is this dimension that distinguishes between the centralist – and centrist – Citizens (Cs) and the main centre-right pro-autonomy parties Convergence and Union (CiU) or between the Socialist party of Catalonia (PSC) and the left-wing pro-

independence party, the Republican Left of Catalonia. While the ex ante defined maps place these pairs of parties rather close to one another, politically they remain diametrically opposed on the issue of Catalan sovereignty, a position that is reflected in the inductively defined maps. Note that because the CHES was carried out in all parts of Spain, I use the positions of the relevant Spanish parties as a proxy for those of the Catalan parties in the corresponding map. Thus, I use data for the (Spanish) Popular Party (PP) to represent the Popular Party of Catalonia (PPC) and for the PSC I use the nationwide Spanish Socialist Workers' Party. I also substitute the Initiative for Catalonia Greens – United and Alternative Left (ICV) with the affiliated nationwide party, the United Left (IU).

The Catalan case shows that it should not be taken for granted that the economic Left/Right and Tan/Gal scales are necessarily independent dimensions. Marks et al. observe that the two scales correlate in such a way that the economic Left is associated with Gal and the Right with Tan in the West, while in the post-communist East the affinities are reversed (see above). This trend seems to be borne out from the analysis of VAA data. In Germany statistically significant covariances were observed both with respect to the ex ante defined Left/Right and Tan/Gal scales and with respect to the inductively defined cultural and economic scales, with the expected association between the Left and cultural libertarianism and between the Right and cultural conservatism (see [Tables 2 and 3](#)). In Bulgaria statistically significant covariances between these two scales are observed for both sets of dimensions, but this time the correlation is in the opposite direction, as hypothesised by Marks et al., with the economic Left associated with cultural conservatism and the Right with cultural liberalism. In Greece, the two scales were found to be almost orthogonal when the inductively defined dimensions were compared ([Table 3](#)), but a statistically significant covariance was observed when the ex ante defined dimensions were compared ([Table 2](#)), with a positive correlation between the economic Right and cultural conservatism.

Conclusion

This paper explores the dimensionality of the political space in four different European territories. Its aim is to test the validity of a two-dimensional model of political space (economic Left/Right versus Tan/Gal) that relies heavily on the work of Inglehart and his associates. It uses opinion data generated from VAAs conducted in each territory to test this model using CFA. Finding the model inadequate it then uses an inductive method to generate latent policy dimensions from the data using a combination of EFA, CFA and a monotonicity test. It also maps the political opinions of political parties with respect to the dimensions defined ex ante and to those defined inductively.

The results of the analysis suggest that while the policy spaces in these four very different European territories share a number of commonalities, their dimensional structure varies in two distinct ways. First, neither the total number of relevant dimensions nor the fundamental nature of what each dimension represents can be taken as

given. In three of our four cases (Germany, Greece and Bulgaria), a distinct cultural and economic dimension were both identified, but in one case (Bulgaria) an extra dimension (populism) was found to be relevant. In the fourth case (Catalonia), the economic and cultural dimensions were found to collapse onto one single Left/Right “super-dimension” and an extra dimension was identified that related to citizens’ positions with regard to Catalan autonomy. This suggests that the tendency of some scholars to assume the existence of a two-dimensional (economic versus cultural) model across all countries is misplaced. Indeed, the autonomy dimension may be relevant in a number of other European territories, and a three-dimensional model that includes an economic dimension, a cultural dimension and an autonomy dimension is theoretically feasible. An earlier study drawing from VAA-generated data suggests that this model may indeed apply to Scotland (Wheatley et al. 2014).

Second, even in those three cases in which distinct cultural and economic dimensions have been identified, the content of each dimension varies from case to case. This applies particularly to the cultural dimension, which is dominated by issues of immigration and EU integration in Germany, issues involving ethnic and religious minorities in Bulgaria and includes the role of the Church in Greece. While these variations echo the assertion by Marks et al. that this dimension is “more diverse than the Left/Right dimension” (Marks et al. 2006, 157), they should caution the scholar to be more sensitive to contextual factors when considering ideological dimensions. While the economic dimension is defined by similar issues in all cases, minor contextual variations are observed here too with the inclusion of an item on foreign policy in Greece, and on economic patriotism in Bulgaria.

As to whether or not the variations observed in the number, nature and content of each dimension reflect societal cleavages or are rather a consequence of vicissitudes in the contemporary policy agenda, the analysis carried out here offers a number of pointers that suggest the former may be the case. First, Lipset’s (1959) observation that in certain Catholic countries the religious and secular cleavages tend to be mutually reinforcing appears to be confirmed in the case of Catalonia. Further testing of these hypotheses with similar data from France, Italy, Portugal and Austria may be necessary before we can firm up on this conclusion. Similarly, the centre–periphery cleavage identified by Lipset and Rokken (1967) appears to remain relevant today in a number of European territories and its salience is reflected in the apparent existence of a separate autonomy dimension in Catalonia. Indeed, the salience of this dimension may be increasing in some peripheral European nations as pressure mounts towards greater autonomy from the established states.

Second, the German case suggests that the content of the cultural dimension may reflect the emergence more recently of a cleavage between the “winners” and “losers” of globalisation. The cultural dimension in Germany is dominated by issues relating to immigration and EU integration, the very ones that Kriesi et al. (2006) propose to be critical issues for globalisation’s “losers”. The recent emergence of the AfD, which according to our analysis draws its support from those who oppose immigration and

EU integration, provides some tentative early evidence that this cleavage may be beginning to have an impact on the structure of the party system.

Finally, the Greek case shows that despite the economic crisis, Greece displays a very clear two-dimensional structure that includes within it evidence of long-standing cleavages such as the role of the Church in society. While the *content* of the economic dimension reflects contemporary issues (such as the policy of austerity and the International Monetary Fund/EU/European Central Bank memorandum), the *nature* of both dimensions reflects the existence of more stable economic Left, economic Right, nationalist–traditionalist and liberal–cosmopolitan poles. This suggests that even in Greece, policy dimensions may actually be rather stable and enduring and not subject to the vicissitudes of everyday politics. Once again, however, in the absence of time series data, this conclusion should be considered as tentative.

Overall, the identification of separate cultural and economic dimensions from most of the datasets suggests that the two-dimensional model of Marks and his colleagues based on economic Left/Right and Tan/Gal remains a useful heuristic tool and may still be relevant in many European polities. Nevertheless, if this model is applied too literally everywhere without an appreciation of context it may misread the underlying dimensionality of the political space and ignore the fault lines that define party competition.

Supplemental data

Supplemental data for this article can be accessed at <http://dx.doi.org/10.1080/17457289.2014.985222>.

Notes

1. Datasets generated by both Greek VAAs (i.e. May and June) are included in the analysis. This is because issue statements relating to the economic crisis were rather over-represented in the May questionnaire at the expense of cultural items. While the June questionnaire contained a better balance of items, the relatively low number of users filling in the questionnaire meant that rather few supporters of the smallest parties (approximately 100) could be identified for mapping (see below). Inclusion of analyses from both datasets provides an extra test of validity.
2. See *Codebook: 2010 Chapel Hill Expert Survey* at http://www.unc.edu/~gwm/unc/unc/assets/data/pp/2010_CHES_expert_level_codebook.pdf, accessed 19 November 2013.
3. The fact that the number of policy categories is equal to the number of issue statements within the VAA is coincidental. Each category embraces a policy theme, into which typically several issue statements from different VAAs will fall.
4. Those garnering more than 3% of the vote. However, supporters of the mainly ethnic Turkish party in Bulgaria, the Movement for Rights and Freedoms, which gained more than 3% of the vote, is not included because insufficient respondents from their mainly rural heartlands in the South and Northeast completed the VAA.
5. Density maps are generated in such a way that each contour line encloses areas in which the density of users is greater than outside. The 50% contour line is identified using the two-dimensional Kernel density estimation function in the r-package *MASS* (Venables and Ripley 2002).
6. The 2010 Chapel Hill Survey did not include codings of three new or small parties: the Independent Greeks (ANEL), the Democratic Left (DIMAR) and Golden dawn (XA).

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