



GV390: GOVERNMENT DISSERTATION OPTION

# An Average Choice

*Limitations of the Classic Left-Right Model, and the Case for  
Multidimensional Solutions to Political Preference Communication in  
Elections*

Candidate Number: 11250

Word Count: 10,992

## ABSTRACT

---

This paper re-evaluates the contemporary utility of the classical two-dimensional Left-Right heuristic model of political preferences. A cursory meta-analysis of its use across democracies internationally reveals varying degrees of applicability, as well as taking on different meanings in different geographical spaces and over time. Moreover, a statistical analysis of data from the 2011 Swiss Federal Elections shows the classical Left-Right model to be both internally inaccurate with respect to the mapping individual policy preferences, and externally inaccurate with regard to the communication of policy preferences between voters and electoral candidates. A further test of the comparative utility of two-dimensional versus more multidimensional models reveals the latter are capable of explaining more of the variance in individual policy choices while still remaining comprehensible. In light of this, this paper proposes a two-tier model: While the classical two-dimensional Left-Right model may retain some utility as a verbal heuristic, when it comes to voting for election candidates it proves inadequate, and multidimensional preference representation models offer more accurate matching between voters and candidates, hence adhering far more closely to ideal democratic representative theory. Emerging technological solutions such as Voting Advice Applications (VAAs) enable a simultaneous increase in the accuracy with which voters and election candidates can be matched, while reducing the costs associated with voting.

## TABLE OF CONTENTS

Abstract.....	5
1 Introduction .....	8
1.1 The Left-Right Model: Its Constructed Origins and Dispersion .....	8
1.2 The Context: Uninterested and Uninformed Democracies .....	8
1.3 Aim and Scope.....	9
1.3.1 Question.....	9
1.3.2 Thesis.....	9
2 The Utility of Left and Right as Political Preference Descriptors: A Preliminary Meta-Analysis.....	10
2.1 A Useful Heuristic in a Discursive Context.....	10
2.2 Limited Utility across Geographic Space .....	12
2.3 Limited Utility over Time .....	13
3 Theoretical Considerations: Towards a Two-Tiered Framework of Preference Communication .....	14
3.1 The Left-Right Model's Limited Utility for Describing Individual Political Preferences and Communicating Them .....	14
3.1.1 Hypothesis 1: Internal Inaccuracy .....	17
3.1.2 Hypothesis 2: External Inaccuracy .....	18
3.2 Positive Theoretical Framework: Towards a Two-Tiered Framework.....	19
3.2.1 Hypothesis 3: Dimensionality.....	22
4 Methodology .....	23
4.1 Data .....	23
4.1.1 Preparatory Treatment.....	24
4.2 Potential Limitations.....	24
4.3 Hypothesis 1: Internal Inaccuracy.....	26
4.4 Hypothesis 2: External Inaccuracy.....	26
4.5 Hypothesis 3: Dimensionality .....	27
5 Results and Analysis.....	28
5.1 Hypothesis 1: Internal Inaccuracy.....	28
5.1.1 Descriptive Statistics .....	28
5.1.2 Selected Policy Preference Distributions: Voter Social Continuum .....	29
5.1.3 Selected Policy Preference Distributions: Voter Economic Continuum .....	30
5.1.4 Principal Component Analysis .....	31
5.2 Hypothesis 2: External Inaccuracy.....	32
5.3 Hypothesis 3: Dimensionality Evaluation.....	33
6 Conclusion.....	35
7 Bibliography .....	36
8 Appendix .....	40
8.1 Smartvote Input Coding Scheme .....	40

8.2	Hypothesis 1 .....	40
8.2.1	Coding Criteria: Social vs. Economic Continuums.....	40
8.2.2	Coding Criteria: Directional Effect.....	46
8.2.3	KMO and Bartlett's Test.....	46
8.2.4	Pattern Matrix .....	46
8.3	Hypothesis 2 .....	50
8.3.1	Sample Preference Distributions: Voter-Candidate Dyad Comparison .....	50
8.4	Hypothesis 3 .....	51
8.4.1	Component Correlation Matrix.....	51
8.4.2	Pattern Matrix .....	52

# 1 INTRODUCTION

---

## 1.1 THE LEFT-RIGHT MODEL: ITS CONSTRUCTED ORIGINS AND DISPERSION

A critical re-evaluation of the classical Left-Right model of political preferences is long overdue. Today it is widely used in democracies around the world, yet it remains as context-dependent and constructed as its origins made it. We have adopted a common heuristic which has its roots in the French Revolutionary “Assemblée Nationale” of 1791. It was a description of the seating arrangement between the Royalists and Revolutionaries in the parliamentary hemicycle, with J.W.S. Lidderdale pointing out simply that “‘Gauche’ et ‘droite’ veulent dire à gauche et à droite du président...” (Lidderdale, 1951, p. 138).

This classical Left-Right model has long been entrenched in Western democracies, but has more recently spread to developing countries in Eastern Europe after the collapse of the Soviet Union, to Africa, the Asian Subcontinent, and even to a modernising China (Laponce, 1981, pp. 50-57). The configuration which predominates in Western democracies has two intersecting continuums – *Liberal-Authoritarian* and *Laissez-Faire-Interventionist*– typically projected on a two-dimensional plane (see Bobbio, 1997; Mavrogordatos, 1987; Middendorp, 1989). Rokeach (1973) usefully suggests these revolve around the two core values of “equality” and “personal freedom” respectively. As a convention, throughout most Western democracies, on the *Liberal-Authoritarian* continuum ‘Liberal’ policy positions correlate with Left-wing, and ‘Authoritarian’ with Right-wing preferences. Meanwhile, on the *Laissez-Faire-Interventionist* continuum, ‘Laissez Faire’ policy positions correlate with Right-wing, and ‘Interventionist’ with Left-wing preferences (Middendorp, 1989). For the purposes of this paper the term “Left-Right model” will henceforth encompass both these continuums.

However, given the constructed origins of this scheme, unsurprisingly it has taken on varied meanings across geographic space and over time. The adoption rate of this model also varies widely. Even within countries, the reductionist nature of the Left-Right model may fail to represent individual political preferences for both voters and candidates, leading to inaccuracies in the communication between them, thus adversely affecting candidate evaluation and selection by voters. Hence we are tasked with challenging its utility as a comprehensible and accurate descriptor of individual political preferences and party positions.

## 1.2 THE CONTEXT: UNINTERESTED AND UNINFORMED DEMOCRACIES

Recent trends of de-politicisation characterised by decreasing voter turnout (Pintor, et al., 2002, p. 77), declining party membership rates (Mair & van Biezen, 2001, p. 12) and party convergence in Western democracies (see *inter alia*: Bara & Budge, 2001; Endersby & Galatas, 1998; Green, 2007, p. 629; Goot, 2004, p. 49) may be leaving a ‘heuristic vacuum’, since voters seem to be abandoning those sources of “cues” and Left-Right political-spatial orientation upon which they classically relied. This has raised

informational costs (Downs, 1957) and increased the need to find more accurate heuristic devices and language models of political preference representation. As Norberto Bobbio argues, division into just two opposing camps "has become inappropriate, and the resulting political spectrum insufficient, in the increasingly complex political world of large-scale societies..." (1997, p. 4).

The recent advent of Voting Advice Applications (VAAs), which provide users with multidimensional<sup>1</sup> graphical representations of their political profiles, and can serve to match voters with candidates through the minimisation of distance between all corresponding policy preferences, seems to hold promise with respect to providing individuals with more accurate information in a simplified format (Ladner & Fivaz, 2012). However, whether they can fill the 'heuristic vacuum' and coexist with or even replace the classic Left-Right model remains a contentious question, which this paper aims to shed light on.

### 1.3 AIM AND SCOPE

In light of these observations, the aim of this paper is to provide a critical re-evaluation of the utility of the two-dimensional Left-Right model in (1) representing individual preferences in a quotidian discursive context (internal accuracy), and (2) in providing a mode of accurate political preference communication between voters and candidates before elections (external accuracy), before (3) testing whether multidimensional conceptions of political preferences prove superior to these two ends.

#### 1.3.1 Question

Hence the central question of this paper is:

Does the classical Left-Right model of political preferences serve as an internally and externally accurate mode of political preference representation and communication between voting citizens and their political representatives, and if not, do more multidimensional models prove superior regarding these two ends?<sup>2</sup>

#### 1.3.2 Thesis

Overall, it will be demonstrated that to a significant extent, while the classic Left-Right model may remain useful in communicating individual or collective policy preferences and political-spatial positions in everyday discourse, due to particular features inherent to its reductionism, it is in fact an internally inaccurate method of portraying these preferences and positions, and therefore has limited external accuracy in political preference communication between voters and election candidates during elections.

---

<sup>1</sup> For the purposes of this paper the term 'multidimensional' refers to models of political preference representation which have more than two dimensions ( $D > 2$ ).

<sup>2</sup> For the purposes of this paper, 'internal accuracy' refers to the degree of accurate representation of the policy preferences of individuals, while 'external accuracy' refers to the degree of accuracy with which voters' individual political preference profiles are matched with those of electoral candidates.

A large-n statistical analysis of individual preference distributions registered in a survey held around the 2011 Swiss federal elections reveals that the classic Left-Right model leads to an internally inaccurate description of the policy preferences and political-spatial positions of voters. A "mean average" of individual voters' preferences is inaccurately assumed to indicate their true political preferences, obscuring a wider than expected distribution of preferences that can even tend towards political extremes. Further analysis shows the model to lead to externally inaccurate communication of political preferences and positions between voters and candidates.

Further it will be shown that multidimensional models of political preference representation, such as VAAs, provide more utility through offering higher accuracy, while remaining comprehensible. This is evident through their ability to explain more of the variance in individual policy choices, while at the same time remaining comprehensible enough that individuals are prepared to switch their electoral preferences in line with their recommendations. Thus a two-tiered framework is proposed to reconcile the two model systems; with the Left-Right model retained as most appropriate for the context of quotidian discourse, and the use of more multidimensional models recommended specifically for the context of elections.

## **2 THE UTILITY OF LEFT AND RIGHT AS POLITICAL PREFERENCE DESCRIPTORS: A PRELIMINARY META-ANALYSIS**

---

### **2.1 A USEFUL HEURISTIC IN A DISCURSIVE CONTEXT**

Although it arose historically, the classical Left-Right model remains salient in everyday public discourse. Arguments abound for its continued use as a heuristic device to communicate political preferences between individuals and political actors.

One of its key strengths lies in its simplicity. A two-dimensional linear representation of political preferences in the complex political arena of contemporary democracy lies well within the normal cognitive capacities of voters (Conover & Feldman, 1984, p. 100). According to Anthony Downs (1957) and Mancur Olson's (1965) rational choice theories of political participation, voters face disproportionately high information costs during election periods. And a heuristic such as the Left-Right model is key to reducing informational costs for the public and political actors. As Fuchs and Klingemann argue, it "facilitates efficient communication and orientation in the political sphere" between members of the public, between them and their political representatives or election candidates, and between politicians themselves (1989, p. 233).

The mechanics of this inherently reductionist system arguably work by grouping particular policy positions into ideological 'packages' which political parties may adopt, disassemble and re-assemble or re-formulate

(Hinich & Munger, 1997), thereby associating themselves with particular spatial positions on the political preference spectra. Voters, candidates, and incumbent representatives choose parties and their ideology 'packages' based on a Left-Right proximity model of association with their pre-existing political preferences (see esp. Rosenthal & Sen, 1977; Downs, 1957; Hinich & Enelow, 1984; Powell, 2000, pp. 159-232) or a prioritisation of salient issues. As Asher Arian and Michal Shamir (1983, p. 141) note, these "political labels provide individuals with shortcuts and simplifying devices for orientation and guidance in the political system". In other words, members of the public take "cues" from the parties they identify with, and tend to follow their positions on salient issues as they arise (see Hooghe, 2005; Steenbergen & Jones, 2002; Granberg, 1985). However, as Charles J. Pattie and R. J. Johnston remark, while voters' party support may be correlated with their own political beliefs, "the causation is complex and recursive: party support...helps form attitudes, which help shape party support, and so on." (1989, p. 206). By associating with the conventional ideological 'packages' adopted by parties, voters and political actors may experience pressure to assimilate political preferences from them, integrating them into their own pre-existing set of beliefs because a desire for cohesion with the group coaxes them to experience a sense of internal coherence in them.

Moreover, it may be argued that the Left-Right schema, having become a universally accepted and understood language of political preference communication, despite its reductionist low-dimensionality is a useful and accurate mode of conveying preferences between voters, parties, and political actors. Addressing voters, C. Van der Eijk and B. Niemöller (1983) demonstrate how in multi-party systems voters can identify with multiple parties within either left or right frameworks, but will not cross the great divide between them. Geoffrey Evans et. al. in their study of Left-Right and Libertarian-Authoritarian values in the British electorate conclude that the two "scales are shown to have respectable levels of internal consistency, high levels of stability over a one-year period, and to be useful predictors of support for political parties." (1996, p. 93). However this noted predication on the observed time period subtly hints at inherent limitations in the scheme. Shifting focus to political parties, Till Weber's (2007) empirical work on campaign mobilisation in European Union (EU) elections confirms Hix and Hoylands' assertion that "political competition in the European Parliament is the left-right: since a group is more likely to vote with groups that are closer to it on the left-right dimension than groups that are further away." (2011, p. 144). Left-Right proximity models have, according to Laver and Budge (1992), proved quite accurate in explaining coalition formation patterns. Indeed it would seem that even the policy outcomes of incumbent governments can be explained through the Left-Right model (Klingemann, et al., 1994).

Taking a more constructivist approach, one could even argue the converse: that the Left-Right model to an extent shapes debate in national political spheres and helps construct individual political identities. Jonathan White maintains that "Left and Right...are immanent to political conflict rather than an exogenous framework by which to represent it." (2011, p. 128). Asher and Shamir go yet further, suggesting that "[s]ocial adjustment is the second function of the left-right label...[i]t fulfils one's needs for self-identification and social acceptance by significant others and reference groups from which one



learns one's political and social identification." (1983, p. 141). Despite these considerations, however, the Left-Right model faces considerable limitations in its utility.

## 2.2 LIMITED UTILITY ACROSS GEOGRAPHIC SPACE

A cross-sectional geographic analysis of the Left-Right model reveals a highly variable degree of usage and adoption, and uncovers a significant degree of inconsistency in its meanings across various states and regions. Addressing the applicability of the model, analysis of the World Values Survey by Russell J. Dalton (2006) has shown that populations in several regions cannot even place themselves on a continuous left-right scale. He found this to be particularly the case in Arab and Middle Eastern states, with for example only 12% of Pakistani respondents able to locate themselves on the scale. More surprisingly, parts of Western Europe appear to struggle too: In the European Social Survey of 2004, Peter Mair notes, "more than one-third of Portuguese respondents were unable or unwilling to define themselves in left-right terms..." (2007, p. 209). Even between Western democracies there exist inconsistent degrees of identification and association: Cees P. Middendorp notes that the Dutch electorate is "...more capable than the American electorate of organising their beliefs along consistent ideological lines." (1989, p. 281). André Freire and Kats Kivistik (2013) lend weight to these findings through a more recent empirical mapping of the reach of the Western conception of the Left-Right model, finding that while it has had a significant impact on the conception of the Left-Right cleavage around the globe, it still retains a higher degree of adherence in Europe and the United States than in other regions.

The distinction significantly varies in meaning across geographic space too: Doh Chull Shin and Byong-Kuen Jhee show in their case study that "...South Koreans use left-right terminology differently than do Europeans in social democracies," preferring to use the terms "progressive" and "conservative" instead of "left" and "right" (2005, p. 393). In Latin America, for example, Elizabeth Zechmeister's study reveals that while Mexican politicians "...linked left-right semantics to both economic and social issues; in Argentina, legislators linked ideological labels to issues to a lesser degree, and mostly to religious and social issues." (2006, p. 155). On this point it could be argued that the cross-national variation in meanings does not distort political preference communication much if there is simply a consistent understanding within specific countries of those meanings – it is perhaps only a loss to cross-national comparative political science studies.

However, today's increasing globalisation and regional integration provide strong grounds for refuting such an argument, while exposing the potential risks this has created. Take for example the EU and its parliamentary elections. In a case study of political ideological positions in Hungary, Bodan Todosijević (2004) shows how political parties have reversed economic positions relative to those in most of Western Europe, with a left-wing position typically advocating a *laissez-faire* policy, and a right-wing position usually encouraging state intervention. Thus the Hungarian electorate may face difficulties and distortions when trying to interpret positional information on the regional level, for example when viewing two-dimensional

spatial maps of EU parties such as those developed by Gail McElroy and Kenneth Benoit (2010, p. 385). Simon Hix et. al. maintain that the “classic left-right dimension found in domestic politics” is the only significant one in the European Parliament (2006, p. 494). The risk here is that a Hungarian voter or an MEP could for example identify the Association of European Conservatives and Reformists (AECR) as a right-wing party, and based on their domestic understandings of the Left-Right model believe it held restrictive or interventionist economic policies, when in fact the party’s 2014 manifesto clearly states that the “AECR is committed to the spread of free commerce and open competition, in Europe and globally.” (Association of European Conservatives and Reformists (AECR), 2014).

## 2.3 LIMITED UTILITY OVER TIME

Even when focusing on a particular country or region, the meanings associated with the Left-Right model can change or even completely reverse, detracting from its overall utility as a mode of political preference communication. Taking the United States as an example, Schofield et. al. (2003) provide convincing evidence showing how between 1964 and 1992, Democrat presidential candidates increasingly displayed liberal social policies over time, and conversely, Republican candidates appeared to shift towards more conservative social policies. The initial ideological combinations of economic and social policies - in the Democrat Party’s case economically interventionist and socially conservative and in the Republican Party’s economically free-market and socially liberal – were steadily broken up and recombined.

This is no geographically isolated phenomenon, as case studies from Asia and Europe show. In South Korea, Shin and Jhee have observed that “[t]he ideological disposition of the South Korean population as a whole has shifted from the right to the center and left...” (2005, p. 387) - signalling shifts in common understandings of left and right ideologies over time. In Western Europe a longitudinal study of Belgium, Britain, Denmark, France, German, Ireland, Italy and the Netherlands by Oddbjørn Knutsen reveals how “...new meanings of left and right are added to the old meanings.” (1995, p. 87).

Adopting a more Hegelian meta-historical narrative as recently re-iterated by Francis Fukuyama (1992), countries and regions may differ in their conceptions of left and right, or may evolve further cleavages due to asynchronous rates of political and social development. We can expect each political society to evolve and develop more complex needs and new values over time. Dalton’s (2006) findings on the low rates of identification with and adoption of the Left-Right model in pre-modern societies would support this. Meanwhile, Seymour Martin Lipset and Stein Rokkan’s (1967) “social cleavages” model takes a class-based view, illustrating how modern materialist societies’ political preferences tend to be grouped coherently within the Left-Right framework. This model still seems to hold for less wealthy countries and regions (Dalton, 2006). Ronald Inglehart’s (1977) “social modernisation” model accounts for a post-modern world of advanced democracies with post-materialist preferences resulting in additional and more numerous cleavages. His World Values Survey demonstrates “...a shift from overwhelming emphasis on material consumption and security toward greater concern with the quality of life...” in advanced

democracies (Inglehart, 1977, p. 363). Herbert Kitschelt and Staf Hellemans (1990) take this further and examine the political impact this has had, settling on correlation between a country's level of development and the rise of left-libertarian parties based on post-materialist values.

Taken at face value, Inglehart's thesis may seem like an incompatible critique of Lipset and Rokkan's cleavages model. However, one could also accept that Inglehart's proposition is the more dynamic of the two, acting not just as an exogenous comparative account of post-modern societies, but also as an endogenous account of the middle and upper classes within societies, while Lipset and Rokkan's static model would mainly cater to the working class. Thus societies themselves may be said to have endogenous degrees of asynchronous development; their political spheres representable through a combination of basic materialist preferences and priorities, and post-materialist preferences existing side-by side.

In line with the specific focus of this paper, what we are most concerned with is the utility of the Left-Right model in communicating political preferences in a country-internal setting. Given the model's changing meanings and significance over time, there is a significant risk of distortions in political preference communication between generations and social classes. Different age segments of a population may identify to different degrees with the classic Left-Right cleavage model, perhaps with a younger generation being divided through differences in their preferences over issues such as the environment or even web-user data protection. Likewise, social classes may differ in their understanding and use of the Left-Right model, with more privileged socioeconomic groups with post-materialist concerns diverging from the disadvantaged groups with materialist priorities, whose preferences are still arranged along the classic Left-Right cleavage model.

### **3 THEORETICAL CONSIDERATIONS: TOWARDS A TWO-TIERED FRAMEWORK OF PREFERENCE COMMUNICATION**

---

#### **3.1 THE LEFT-RIGHT MODEL'S LIMITED UTILITY FOR DESCRIBING INDIVIDUAL POLITICAL PREFERENCES AND COMMUNICATING THEM**

Where the use of this model is most crucial – in the context of democratic national elections, the focal point of this paper – a theoretically grounded critical assessment proves invaluable in establishing its limitations. We should not be surprised if individual political preferences deviate from the ideological 'packages' embodied by the Left-Right model. The meanings attributed to clustered positions on Left-Right and Authoritarian-Libertarian continuums differ over time and across geographic space. These are socio-historically contingent constructs, usually with no sole author or founding group, that have evolved over time, due in no small part to their doctrinal rivalry (Arian & Shamir, 1983).

As a result, these ideologies display a lack of internal consistency on a number of fundamental principles. For example, classic British Conservatism upholds a high degree of economic freedoms such as free trade and typically maintains a hands-off approach towards markets (Pattie & Johnston, 1989, p. 206). Socially, however, it is more authoritarian and interventionist, *inter alia* positioning itself against legalising same-sex marriage, and opposing freedom of movement and immigration; hardly a consistent combination arranged along the lines of a central principle (Bale, et al., 2010). Likewise, throughout Europe the Socialist movement seems more socially libertarian, pursuing an agenda comprising freedom of speech and conscience, as well as guaranteeing workers' rights and freedoms, while intervening heavily in the economy, thereby placing constraints on the owners of capital (Mair, 2007).

This logical incoherence does not halt at the boundaries of domestic policy. Christopher Coker remarks on the absurdity of the seemingly contradictory foreign policies adopted by actors of particular ideological convictions. He notes that even in the Sino-British Arrow War back in 1856-60 "[i]t was the Conservative opposition which censured the Liberal government for thinking that war could, or even should, be fought in the interests of humanity." (Coker, 2009, p. 34). Indeed in more recent times Western interventions into the Balkans in the 1990s, and Iraq<sup>3</sup> and Afghanistan<sup>4</sup> in the early 2000s exposed the dark logic of interventionist doctrine in the name of Liberalism; an ideology whose principles are usually presented as deontological and concerned with human rights and liberties (Kelly, 2005).

Empirical studies such as that conducted by Pamela Johnston Conover and Stanley Feldman highlight the effect of the at times outright contradictory status of Western ideology in terms of the nature and degree of the adoption of these doctrines by the voting public. Through factor-analysing a Q-method study, they conclude that "individuals have atomized perspectives," and further suggest that "[m]uch of the mass public simply may not need a broad-based ideology in order to organize their political worlds..." (1984, p. 109). This incoherence is merely symptomatic of the haphazard and non-linear historical construction of ideologies and their constituent conventions.

However, the strongest argument detracting from the utility of the Left-Right model in representing individual political preferences concerns how the scheme forces its adherents to aggregate their own preferences – at times producing a fundamentally misleading and inaccurate picture. If one assumes a "proximity model" commonly known as the "spatial theory of voting" (Hinich & Enelow, 1984) mediated by issue salience weighting (Wagner & Ruusuvirta, 2012), it follows that in the context of the Left-Right model voters and candidates must aggregate their preferences into a single point on a two dimensional plane through a process of weighted arithmetic mean averaging (see esp. Davis, et al., 1970; Downs, 1957). The key theoretical problem with positional representation through aggregated averages is that they tend to obscure the distribution of individual policy preferences and mask 'outlier' preferences – the latter

---

<sup>3</sup> Approximately 500,000 deaths attributable (Hagopian, et al., 2013)

<sup>4</sup> Approximately 16,000 deaths attributable (United Nations Assistance Mission in Afghanistan, 2012)

being preferences that do not conform with the ideological policy set the holder subscribes to, but are nonetheless their valid personal beliefs.

Figure 1: Ideologically Coherent Left-Distribution











Ideologically Coherent Left-Distribution		
Frequency	Value	Cumulative Frequency
	1	1
	2	4
	<b>3</b>	12
	4	8
	5	5
	6	0
	7	0
	8	0
	9	0
	10	0
Arithmetic mean ( $\mu$ )		3

Figure 2: Ideologically Incoherent Left-Distribution











Ideologically Incoherent Left-Distribution		
Frequency	Value	Cumulative Frequency
	1	2
	2	6
	3	6
	<b>4</b>	4
	5	0
	6	0
	7	0
	8	8
	9	0
	10	10
Arithmetic mean ( $\mu$ )		3.6

Figure 3: Ideologically Coherent Centre-Distribution











Ideologically Coherent Centre-Distribution		
Frequency	Value	Cumulative Frequency
	1	0
	2	0
	3	3
	4	8
	<b>5</b>	20
	6	12
	7	7
	8	0
	9	0
	10	0
Arithmetic mean ( $\mu$ )		5

Figure 4: Ideologically Incoherent Centre-Distribution











Ideologically Incoherent Centre-Distribution		
Frequency	Value	Cumulative Frequency
	1	1
	2	0
	3	3
	4	8
	<b>5</b>	10
	6	12
	7	0
	8	8
	9	0
	10	10
Arithmetic mean ( $\mu$ )		5.2

Figure 5: Ideologically Coherent Right-Distribution





















Ideologically Coherent Right-Distribution		
Frequency	Value	Cumulative Frequency
	1	0
	2	0
	3	0
	4	0
	5	0
	6	6
	7	14
	<b>8</b>	32
	9	18
	10	10
Arithmetic mean ( $\mu$ )		8

Figure 6: Ideologically Incoherent Right-Distribution

Ideologically Incoherent Right-Distribution		
Frequency	Value	Cumulative Frequency
	1	1
	2	2
	3	0
	4	0
	5	0
	6	0
	<b>7</b>	0
	8	16
	9	45
	10	10
Arithmetic mean ( $\mu$ )		7.4

This theoretical problem can be best illustrated, as in the models above, by adopting a spatial theory approach commonly used by rational choice theorists of voting (see in particular Hotelling, 1929; Smithies, 1941; Downs, 1957). Six possible distribution models for individuals on a single economic Left-

Right continuum are presented (*Figures 1-6*). The Left-Right continuum is simulated as an ascending ten-point value scale, with “1” and “10” representing the Left and Right ideological extreme positions respectively. In addition, an exact total of ten policy items are assumed to be distributed across the continuum for all models. Consider a voter or candidate who self-identifies with classic ‘Leftist’ ideology. If they adopt an ideologically coherent set of political preferences, we could expect a normally distributed yet tightly bunched set of preferences to the left of the scale as is simulated on *Figure 1*.<sup>5</sup> Note that their arithmetic mean score for this distribution would have a value of 3.

Were a different individual to largely identify with the Left, and yet still wish to adopt some Right-wing policies as the simulation on *Figure 2* shows (for example, a working class voter scared of immigration costing them their jobs or depressing wages), their arithmetic mean score would remain close to the previous individual described at approximately 3.6. Thus two individuals we would generally describe as ‘Leftist’ could have completely different preference distributions, and we could not predict with a high degree of certainty the policies they would agree with. Likewise, as *Figures 3 & 4* show, we run the risk of equating two individuals as ‘centrists’ when they have completely different preference distributions. The same holds for those who would be deemed ‘right-wing’ in *Figures 5 & 6*, and indeed this is not implausible as accounts of “working class conservatives” show (see both Parkin, 1967; McKenzie & Silver, 1968). These models lend significant theoretical weight to the notion of the Left-Right model serving as an inaccurate descriptor of individual political preferences.

In light of the theoretical considerations highlighted by the model above, to test the extent to which the Left-Right model is an internally and externally accurate mode of political preference representation, two hypotheses are proposed.

### 3.1.1 Hypothesis 1: Internal Inaccuracy

If, as assumed, individuals use their mean positions to represent their political orientations within the Left-Right model framework, for this to have a sufficient degree of accuracy (such that, for example, we could accurately predict their other policy preferences based on their mean position), the distribution of their preferences should tightly adhere to their mean position.

Population Standard Deviation ( $\sigma$ ) is an appropriate standardised statistic for the measurement of this distribution from the mean, and it is hence adopted as a metric. Since we may expect the positions and frequencies of policy preferences for individuals to be normally distributed - although identification with the Left-Right model would theoretically induce a tight clustering of preferences - we must allow for a reasonable distribution of preferences. Therefore we may allow for a policy preference distribution such that one standard deviation reaches but does not exceed 20% of the total range.

---

<sup>5</sup> For the purposes of this paper the terms ‘ideological coherence’ and ‘internal consistency’ may be viewed as interchangeable.

Testing the thesis concerning the internal inaccuracy of the Left-Right model:

H1: If the Left-Right model (based on a mean average proximity model) is internally inaccurate, then a wide distribution of political preferences from the mean will be evident in individual profiles, such that the mean average of the tested population's Standard Deviation  $\sigma > 20\%$  of the total range.

(Where  $H_0$ : If the distribution of individual political preferences exhibits a population Standard Deviation such that  $\sigma \leq (20\% \text{ total range})$ , then the mean average proximity model remains an internally accurate device for describing individual political preferences)

### 3.1.2 Hypothesis 2: External Inaccuracy

Given the above theoretical considerations on the possibility of varying distributions of preferences around similar or identical mean averages, this could prove yet more problematic for voting based on the proximity model. If voters choose their candidates based on a mean average self-perception (translated heuristically into 'Left', 'Right', and 'Centre' orientations), they could be selecting a political representative with entirely different particular preferences – but the same mean average.

Testing the thesis for the external inaccuracy of the Left-Right model:

H2: If the Left-Right model (based on a mean average proximity model) is externally inaccurate, voters and candidates with similar or identical arithmetic mean scores on either social or economic continuums of the Left-Right model will be subject to an error of at least 20% between their individual positions on corresponding policies.

(Where  $H_0$ : If, when matched up with similar or identical arithmetic mean scores on either social or economic continuums of the Left-Right model, the error between voters' and candidates' individual positions on corresponding policies is less than 20%, the Left-Right model retains validity as externally accurate )

These two hypotheses, if validated, would not in themselves prove multidimensional preference representation models to provide more utility. To determine this, an additional hypothesis must be tested.



### 3.2 POSITIVE THEORETICAL FRAMEWORK: TOWARDS A TWO-TIERED FRAMEWORK

The normative theory this paper puts forward, far from advocating a crude abolition of the common discursive Left-Right scheme, is a proposal for a bi-modal or two-tier model of preference communication (see *Table 1* below). Each mode is appropriate to its respective context – quotidian and electoral. From the arguments above it is clear that there are notable benefits from a simplified common language in which to communicate in everyday settings, and this fact cannot be dismissed. In a quotidian setting, one could accept a reasonable degree of inaccuracy as an inevitable trade-off with simplicity and comprehensibility. However, elections are exceptional, since during these periods the communication of preferences is acted upon more than at any other time in the political election cycle, and the citizens of most representative democracies have the greatest say in their governance.<sup>6</sup>

A brief appeal to normative democratic representational theory demonstrates why elections are so important, and why optimally matching voters with their elected representatives is pivotal. Elections are key to the correct functioning of representative democracies. Ideally, since democracy requires ‘rule by the people’, every citizen should have an equal opportunity to partake directly in political decisions. However, due to the need for functional differentiation within society, as well as a lack of time or wealth to participate at all times, citizens commonly delegate their rights of personal representation and control to representatives whom they elect.

It follows that these representatives should be the embodiment of those they represent. This is a key requirement of Hanna F. Pitkin’s proportionalist “Descriptive Representation” conception of representative democracy, which claims advocacy by such political thinkers as John Adams, Edmund Burke, and Honoré Gabriel Riqueti, comte de Mirabeau. This holds that “a representative body is distinguished by an accurate correspondence or resemblance to what it represents, by reflecting without distortion.” (Pitkin, 1967, p. 60). Adopting this principle of democratic representation as the closest possible reflection of the populus, the aim of models for political preference communication should be to provide the most accurate representation of individual political preferences along with the most accurate method of matching voters with the candidates closest to them in terms of their political preferences.

*Table 1: A Two-Tiered Framework of Political Preference Communication*

Model	Tier	Dimensionality	Functional context	Means of calculation
<b>Decisive</b>	1	3-5	National/sub-national elections	Technological (artificial heuristic)
<b>Discursive</b>	2	2	Quotidian discourse (delimited by regional areas of similar understandings and meanings of model)	Cognitive-heuristic

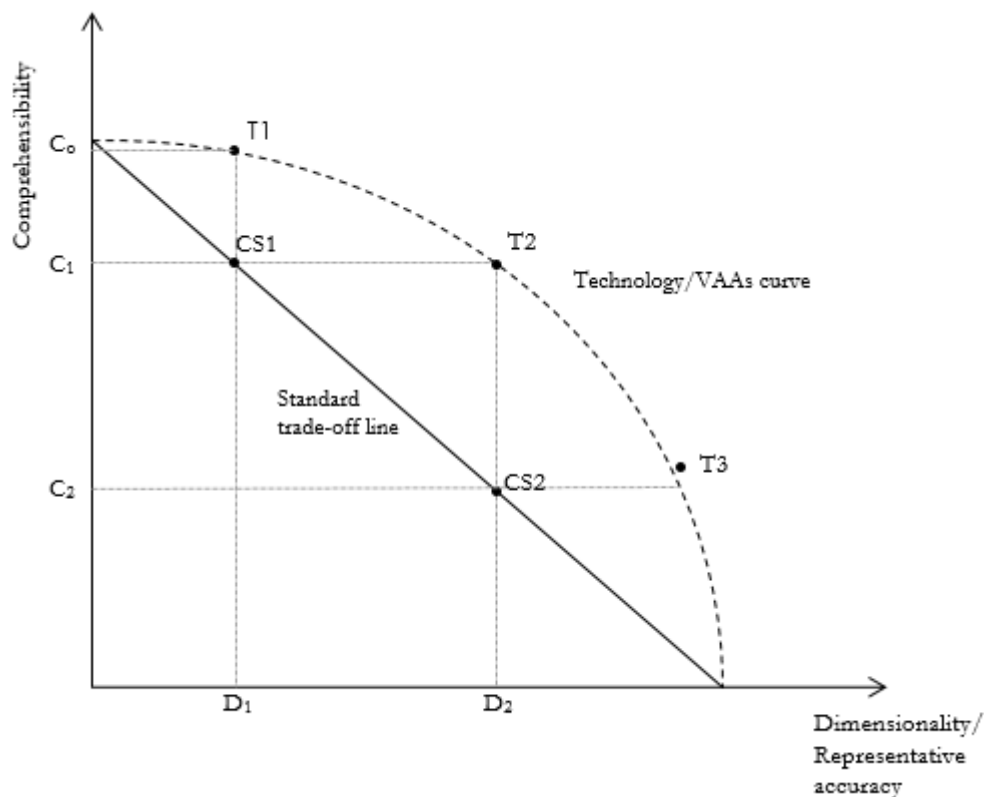
<sup>6</sup> States, such as Switzerland, may exhibit a degree of direct democracy – yet none has approached the standard of the Ancient Athenian *Ekklesia*, where citizens were elected by lot to represent themselves (Aristotle, 1996).



Therefore, in order to achieve the necessarily high degree of precision with which voters should elect their representatives according to normative representative theory, a multidimensional approach is needed that takes the maximum number of individual policy preferences into account. However, asking individuals to communicate their political preferences in more than two to three dimensions, although providing a higher amount of accuracy, would likely go beyond the computational ability of even the most educated, and prove excessively time-consuming. In adopting models with higher degrees of dimensionality, a 'heuristic vacuum' is left over where previously voters would appeal to the Left-Right model, parties, or political personalities for 'cues' on whom to vote for.

In light of this, one may conceive of a theoretical trade-off between the comprehensibility of political preference representation models and their accuracy, as shown in *Figure 7* (Otjes & Louwerse, 2014 (forthcoming)). Here we assume that overall is a function of a comprehensibility-dimensionality/accuracy nexus. As one moves down along the 'standard trade-off line' ( $CS1 \rightarrow CS2$ ) and increases the dimensionality and hence the accuracy of representational models ( $D1 \rightarrow D2$ ), inevitably their comprehensibility decreases proportionately with each added dimension ( $C1 \rightarrow C2$ ), thereby increasing the 'heuristic vacuum'.

*Figure 7: Dimensional Comprehensibility-Accuracy Trade-off in Representational Models*



However, there is a strong case that new technological solutions, only made available in the last decade or so, such as VAAs, can step into the 'heuristic vacuum' and significantly optimise the standard comprehensibility versus dimensionality/accuracy trade-off. They can act as 'heuristic bridges' by lowering

the informational and temporal costs to voters and candidates alike by allowing them to receive simplified lists of voting recommendations and a graphical spatial representation of their political preference profiles based on a short online survey. The large increases in VAA user numbers observed over the last decade (Ladner, et al., 2012, p. 368) is testimony to the ability of technological solutions to overcome informational obstacles (Downs, 1957), while preserving a high degree of accuracy in representing individual political profiles and optimally matching voter and candidate profiles. Euclidean geometric distance formulas can be used to produce optimal matches between voters and candidates by minimising the distance between *each of their corresponding policy preferences*, instead of relying on an arithmetic mean which voters use as a heuristic to find their closest matching candidate under the classic Left-Right proximity model (Lefevre & Walgrave, 2014 (forthcoming)). However, although these technological solutions may be better than cognitive heuristic devices at presenting more complex and accurate information in a simpler way, it is still up to the human user to interpret and internalise them.

The hypothesised effect of the use of technology/VAA's would be a shifting out of the 'Standard trade-off line' to an optimised curve. The reason we may believe the curve would take this particular shape is because we may assume maximum levels of comprehensibility and of dimensionality/accuracy on either axis, both subject to lower marginal gains as they are approached along the curve. As one moves down along the curve towards ( $T1$ ), while dimensionality may increase significantly (for example doubling from a one- to two-dimensional model), comprehensibility only decreases marginally due to users still being able to understand a graphical-spatial representation of their political profile and being able to back-trace, verify to an extent, and identify with the output list of candidate matches they are provided with, referencing and verifying them against other heuristics. This reasoning is based on new empirical findings by Alvarez et. al. (2014) on the 2009 European Parliament elections, which showed that 8% of voters would switch their first party preference when they recognised themselves to a degree in their personalised VAA recommendations.

From ( $T3$ ) to the dimensionality/accuracy axis we would expect the decreasing marginal gain in dimensionality and accuracy to be accompanied by a proportionately higher loss in comprehensibility. This is because we assume a finite number of independent dimensions through which individual political preferences can be described approaching total accuracy. However, as this asymptote is approached, although technology and VAA solutions can greatly simplify the process of finding the closest candidates for voters in terms of their preference profiles, a graphical profile representation with a high dimensionality, such as seven or eight, would likely confuse rather than assist users in their understanding of their own political profiles. In addition, the calculation of models with high dimensionality would make it difficult to back-trace, verify or identify with for users.

The theoretical insight which the 'Technology/VAA curve' lends us is apparent where, for example, an increase in the dimensionality of the representative model to the benefit of its accuracy ( $D_1 > D_2$ ) would lower the overall comprehensibility for the voter ( $C_0 > C_1$ ) to a significantly lower degree than would occur for the 'Standard trade-off line' for the same increase in dimensionality ( $C_1 > C_2$ ). Most notably, the curve

allows for a ‘sweet spot’ ( $T_2$ ) where it would be possible to optimise *both* the comprehensibility and accuracy functions that comprise a representative model’s utility for the user.

Thus the task remains to identify the optimum dimensionality of a preference-representational model that also maximises comprehensibility. If such a model is possible, it would validate the technology/VAA trade-off curve hypothesised above, and justify its adoption for use in the context of elections.

### 3.2.1 Hypothesis 3: Dimensionality

Due to accuracy being a component of the overall utility of preference-representational models, to test whether accuracy does indeed increase with dimensionality, we may hypothesise that multidimensional models with cleavages upward of three dimensions will explain the variance in individual preferences to a greater extent than would two dimensional models. Quantifying this, we should demand that the additional dimensions explain at least a quarter (25%) more of the cumulative variance in individual preferences than does a standard two-dimensional model in order for an increase in complexity to be justified (since this increase harms the heuristic value of the model with each dimension added).

However, recalling that the second component comprising utility is comprehensibility, we may add a proviso that the 25% benchmark should be met or exceeded within a total of six dimensions. Additionally, since we may take VAA outputs influencing users to switch their voting choices as an indicator of the credibility and hence the comprehensibility of the preference-representational model at hand, we may adopt Alvarez et. al.’s (2014) benchmark of an 8% voter choice switch rate and almost double the requirement to 15% for greater validity.

H3: If multidimensional preference representation models have more utility than the classic Left-Right two-dimensional model in describing and communicating individual political preferences, then they must explain a) at least an additional 25% of the total cumulative variance in voter preferences while remaining at under six dimensions and b) a voter choice switch rate greater than 15%.

(Where  $H_0$ : If multidimensional preference representation models do not explain a) at least an additional 25% of the total cumulative variance in voter preferences or exceed six dimensions in doing so, or b) exhibit a voter choice switch rate under 15%, then they have little more utility than the classic Left-Right two-dimensional model does.)

## 4 METHODOLOGY

### 4.1 DATA

Table 2: Voter and Candidate Datasets Summary

Dataset	<i>I. Voter</i>	<i>II. Candidate</i>
Total N	14,067	3,547
Valid N <sup>7</sup>	12,509	3,017
Total Input Variables	161	138
Source	Politools, Jan Fivaz	
Collection/Input Method	Online Survey (input to Voting Advice Application <a href="http://www.smartvote.ch">www.smartvote.ch</a> )	
Survey Target/Context	2011 Swiss Federal Parliamentary Elections	
Date Range	28 Oct. 2011 – 5 Jan. 2012	
Data Format	SPSS	

The two datasets that will be used to test the above hypotheses were obtained from Politools (Politools, 2014), a Swiss political think tank which built and runs [www.smartvote.ch](http://www.smartvote.ch), an online Voting Advice Application. *Smartvote* (Politools, 2014) requires voters and candidates to fill in either a long survey of 75 questions (“Smartvote Deluxe”) or a shorter survey of 32 questions (“Smartvote Rapide”).<sup>8</sup> These questions, designed to indirectly elucidate user political positions and preferences, are all on current political issues arranged under eight separate categories. Respondents respond with a Likert scale range based on their degree of agreement with the questions. *Smartvote* provides prospective voters with three key outputs: an eight-dimensional “Smartspider” chart graphically showing the user’s political profile, a two-dimensional “Smartmap” using the classical Left/Right model, and a “Wahlempfehlung” - a list of closest matched candidates ranked in order of affinity.<sup>9</sup>

These datasets were specifically chosen because they record a relatively large sample of data with surveys engineered to provide enough comprehensive information for at least an eight-dimensional output, making them highly appropriate for testing hypotheses on the dimensionality of models. In addition, given the models and hypotheses being tested, the Likert scaling used by the input questions combined with the candidate-oriented matching function made the datasets ideal for use. The date range (28 Oct. 2011 – 5 Jan. 2012) was selected as an appropriately long period immediately after the 2011 Swiss Federal Parliamentary Elections (23 Oct. 2011), allowing for the maximum possible number of candidate profiles (2,880 - 83% of the total number of candidates standing) to have been recorded, and additionally allowing for the recording of voter choice switching data, an indicator of basic comprehensibility (Politools, 2014).

<sup>7</sup> Valid N = Total N – data rows list-wise only from which all relevant data was missing.

<sup>8</sup> Ten of these questions are budgetary questions. See full input coding scheme in Appendix.

<sup>9</sup> This is performed using a weighted Euclidean distance formula:

$dist_w(v, c) = \sqrt{\sum_{i=1}^n (w_i(v_i - c_i))^2}$ , where  $w_i$ : Weighting by voter on question  $i$ ;  $v_i$ : Voter’s position on question  $i$ ; and  $c_i$ : Candidate’s position on question  $i$ . (Politools, 2011).

Switzerland was chosen as a sample population for empirical testing purposes due to its population's understanding of the Left-Right model being largely congruent with the rest of Western Europe and hence representing the classical model. In addition, Switzerland's well-established federal political system is a blend of direct democracy and representative democracy, with approximately four federal referenda a year (Fivaz & Nadig, 2010). Furthermore, its division into four separate ethno-linguistic regions establishes a natural control for language differences. Two key factors make Switzerland ideal for studying candidate choice in political science. First, the electoral system works through multiparty Proportional Representation (PR), thereby reducing incentives for voters to select their candidates strategically since smaller parties have a reasonable chance of being elected into parliament (Clark, et al., 2009, p. 476) (Duverger, 1959). PR systems are also conducive to multiple parties, which G. Bingham Powell maintains "are needed so that all groups of citizens on the left-right scale can choose compatible representative agents." (Powell, 2000, p. 202). Secondly, Switzerland has an open-list ballot system, allowing voters to make free choices on their preferred individual candidates, and even to assign multiple votes for them (Fivaz & Nadig, 2010, pp. 176-77).

#### 4.1.1 Preparatory Treatment

Before analytical use, both datasets were thoroughly checked for completeness, and all missing values clearly defined.

The only modification to the original datasets was to remove only rows where *all* relevant data was missing. Rows with incomplete data were retained, with the missing values recognised as such by the statistical package.

## 4.2 POTENTIAL LIMITATIONS

A number of areas with limitations and errors potentially affecting the validity of the empirical analysis can be listed, albeit this is not exhaustive. These range from the survey data itself, to its treatment, and extend to the generalizability of the findings.

Concerning the survey, as researchers in political science and psychology point out, much depends on the statement selection used (see respectively Lefevre & Walgrave, 2014 (forthcoming); Schwarz, 1999). As the coding scheme later reveals, there was significant Left-bias in both social and economic continuums. However, this is due to the survey being based upon actual political issues and initiatives at the time – and a majority of these do seem to have a Left-leaning approach. This imbalance could impact the overall outcome in profiling individuals, since they have more opportunity to agree with Left-leaning questions, and it opens up the possibility of sequential 'priming' – especially since the survey questions are clustered into categories (Strack, et al., 2006). Ladner et. al. (2012, p. 382), who are involved in *Politools* and the administration of the survey, admit that young and left-leaning voters predominate in taking it. Naturally this has implications for the representativeness of the survey of the Swiss population's political preferences as a whole. In personal correspondence, Jan Fivaz has also indicated that similar patterns were

evident for candidates. However, for the purposes of this paper, bias is not of particular concern, since consistent coding schemes are applied to both voters and candidates, and we are more interested in the internal and external accuracy of the Left-Right model and the matching up of positions; not in those positions themselves. Another possible source of error is the non-continuous input coding (0,25,75,100) for 65 of the 75 principal survey questions, which could have the effect of clustering preferences non-uniformly along projected continuums (see [Appendix](#)). However, the remaining 10 exclusively budgetary questions do have a continuous scale containing the value '50', leaving an opportunity for reasonably uniform distributions on continuums.

Concerning the treatment of the data, a number of assumptions could form sources of error. The proximity model of voting is assumed, but without any weighting, hence discounting any notion of prioritisation. In addition, it is also assumed that individuals orientate themselves on the Left/Right spatial model by finding a mean average of all their preferences. The coding of data into social and economic dimensions, as well as into Left and Right within those categories, was done on an informed contextual basis, but may contain marginal subjective influences inherent to the author's own cognitive state, education, and political-cultural awareness. The hypotheses presented below do investigate relationships to an extent, but these are more correlative effects than causal in nature. While their metrics and criteria were designed with a degree of informed judgement and consideration, they are constructed. This raises the risk of a Type I error. Nevertheless, the subject matter too is largely socio-culturally constructed (Arian & Shamir, 1983), and hence its perception must be expected to contain an element of this.

Finally, while the data does represent a relatively large sample size, differences in perceptions of political preference models may decrease the international generalizability of the results, since Swiss political perceptions too have their specific historical context and development path. Moreover, there may be a concern that Swiss voters vote in favour of social cohesion instead of in their own personal interests - going against one of the core assumptions of the proximity model. For example, in 2009 the Swiss electorate voted by 54.56% in favour of an increase in value-added tax (Müller, 2013), and against the introduction of a six-week holiday scheme by 66.50% (ibid., 2013). However, this behaviour in direct democracy may, for our purposes, be differentiated from voting for candidates in elections, where the proximity model has few rivals to account for how voters select their candidates.

### 4.3 HYPOTHESIS 1: INTERNAL INACCURACY

The 75 key survey variables in both voter and candidate datasets were divided into ‘social’ and ‘economic’<sup>10</sup> continuum categories (in line with the Left/Right model being tested), and within those categories, individual survey questions were given a directional effect – a positive answer leading to either a shift rightwards on the continuum (R+) or an opposite shift leftwards (L-) to varying degrees due to the Likert scaling of answer options. To better ensure analysis matched the data-collection method, categories (‘social’ vs. ‘economic’) were divided and assigned partially in accordance with a *Politools* methodology paper (Politools, 2011). This is also why six questions were excluded from the analysis (it was unclear if they would contribute to any category), in accordance with the *Politools* Smartspider graphic representation methodology paper (Politools, 2011).<sup>11</sup> Some survey questions could not be exclusively categorised as ‘social’ or ‘economic’ and were categorised as ‘both’ in the coding scheme. All statistical analysis takes this into account, so both ‘social’ and ‘economic’ groups may draw data from common questions. The specific coding scheme used is set out in the [Appendix](#).

A descriptive statistical analysis was carried out on the four groups, and the Standard Deviation found for every individual’s distribution. An arithmetic mean average was taken of these Standard Deviations to generalise for the survey populations in both datasets.

Next, as confirmatory analysis to explore the degree of internal inaccuracy with which the Left-Right mean-average based model describes individual preferences, a small sample of individual dyads with similar mean average scores were selected, and their individual policy preference distributions investigated.

Finally, a Principal Component Analysis was conducted on the voter dataset for all 75 questions,<sup>12</sup> extracting two components in order to establish the extent to which the Left-Right model explains the variance in individual policy preferences. After testing several rotation methods, an oblique rotation method was selected (Oblimin with Kaiser Normalization) as some principal components could still be correlated (as opposed to an orthogonal approach), and this is a more realistic view of political preferences (see esp. for factor analysis methodology Vogt, 1993; Kim & Mueller, 1978; Kline, 2002).

### 4.4 HYPOTHESIS 2: EXTERNAL INACCURACY

To test this hypothesis, dyads of voters and election candidates were formed by matching them up based on their arithmetic mean averages. Each voter was perfectly matched (to two decimal places) with two

---

<sup>10</sup> Here referring to the aforementioned classical “Liberal-Authoritarian” and “Laissez Faire-Interventionist” dimensions of the Left/Right model.

<sup>11</sup> This is because in this first case we are still dealing with a graphical representation of individual political preferences on a continuum.

<sup>12</sup> Here all 75 questions were analysed in case the six previously excluded questions did indeed correlate with specific political cleavages or factors.



candidates – one for the ‘social’ and one for the ‘economic’ continuum, since no perfect matches were possible in terms of mean averages for both ‘social’ and ‘economic’ dimensions, nor would comparisons of preference distributions be possible.

A sample of ten voters was selected at random from 12,509 valid entries. Perfect candidate matches were found for them for both ‘social’ and ‘economic’ dimensions, forming a total of 20 dyads.

In order to calculate the total difference between corresponding individual policy preferences for the dyads, the following formula was used, using the sum of the absolute value of differences between voters’ and candidates’ positions on corresponding survey questions:

$$\sum_{i=1}^n |v_i - c_i|$$

(where  $v$ : voter position,  $c$ : candidate position, for  $i$ : specific survey question)

As summarized below, to express this in terms of ‘error’, a theoretical maximum distance was calculated for each category, with that of the ‘Social’ category being 48 (the number of questions coming under the category) multiplied by 200 (the total theoretical range of the continuum (-100↔100)), and the same calculations method used for the ‘Economic’ category for 40 questions. The total difference formula is then divided by this theoretical maximum distance to yield ‘Error’, and ‘%Error’ when multiplied by 100.<sup>13</sup>

*Table 3: Error Calculation*

Theoretical Maximum Distance		Error	%Error
Social	Economic		
48x200=9600	40x200=8000	$\frac{\sum  v_i - c_i }{Theor. Max. Dist.}$	$100 \left( \frac{\sum  v_i - c_i }{Theor. Max. Dist.} \right)$

## 4.5 HYPOTHESIS 3: DIMENSIONALITY

Two measures were used to assess the utility and find the ‘sweet spot’ of multidimensional models in terms of accuracy and comprehensibility.

To measure the descriptive accuracy through the explanation of additional variance in individual policy preference choices, a Principal Component Analysis was run on the voter dataset using the same methodology and rotation as outlined for Hypothesis 1, but extracting for five factors after an initial analysis of Eigenvalues on a Scree Plot (see [Results and Analysis](#) section).

<sup>13</sup> It should be noted that this is a very strict measure, since the theoretical maximum distance methodology assumes that for each policy voters and candidates matched up into dyads could differ on every policy by 200 points. However, this makes for rigorous error calculations which may be accepted with a high degree of certainty.



Taking the voter choice switch rate as a variable indicating the comprehensibility or plausibility of the output of multidimensional preference representation models, this statistic is evaluated using the respondent data from the voter dataset, bearing in mind that this pertains to an eight-dimensional “Smartspider” graphical representation.

## 5 RESULTS AND ANALYSIS

### 5.1 HYPOTHESIS 1: INTERNAL INACCURACY

#### 5.1.1 Descriptive Statistics

*Table 4: Voter Summary Descriptive Statistics*

Statistic	Dimension	
	Social	Economic
Valid N	12504	12508
$\mu$ Mean	-34.84	-26.46
$\mu$ Std. Deviation $\sigma$	<b>59.16</b>	<b>63.01</b>
$\mu$ Skewness	0.616	0.512

*Table 5: Candidate Summary Descriptive Statistics*

Statistic	Dimension	
	Social	Economic
Valid N	3018	3016
$\mu$ Mean	-31.49	-24.50
$\mu$ Std. Deviation $\sigma$	<b>56.44</b>	<b>60.18</b>
$\mu$ Skewness	0.537	0.468

The arithmetic mean average sums of the Standard Deviation of voters’ and candidates’ preferences on both ‘Social’ and ‘Economic’ continuums are remarkably large proportions of the total range, suggesting a wide distribution of preferences around the mean for both voters and candidates. Interestingly, candidates appear to have a tighter distribution around the mean, which is not unexpected, since they are likely more politically informed and active individuals who cohere more closely to Left-Right ideologies. In addition, the negative averages of arithmetic means in all four groups combined with a consistently positive skewness score confirm a Left-leaning survey bias as discussed under the ‘Limitations’ section above.

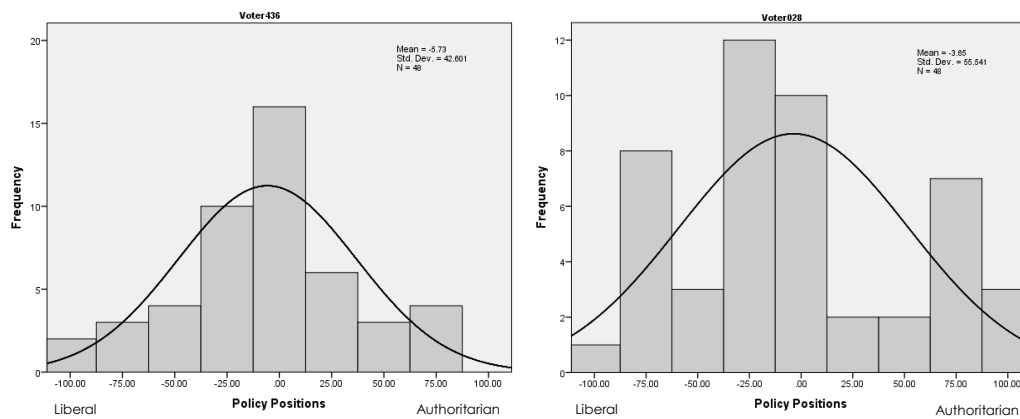
With respect to the criteria of Hypothesis 1 denoted earlier, as shown in the table below, all four scores meet the criteria for the hypothesis to be accepted since all Standard Deviations are  $\sigma > 20\%$  of the total range. We may in this case reject the null hypothesis ( $H_0$ ).

Table 6: Calculation of Standard Deviation as a Percentage of the Total Range

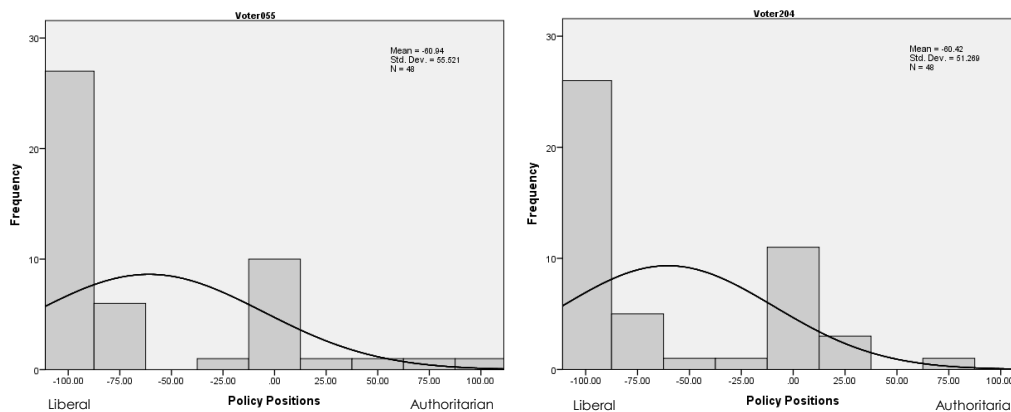
Voters		Candidates	
Social	Economic	Social	Economic
$59.16/200=0.296$	$63.01/200=0.315$	$56.44/200=0.282$	$60.18/200=0.301$
$0.296*100=29.6\%$	$0.315*100=31.5\%$	$0.282*100=28.2\%$	$0.301*100=30.1\%$

The implications of this phenomenon on describing individual preference profiles is explored below. A selection of dyads of individuals (from the voter dataset) matched through similar mean averages illustrates the degree of mismatch between their individual distribution policy preferences. This means that while individuals could associate themselves with others by virtue of a heuristic proximity model (their mean averages being representative of their orientations in terms of ‘Left’, ‘Right’, and ‘Centre’), their individual preferences could be significantly different on specific policy issues. Hence the Left-Right model is shown to be prone to significant error in its predictive and descriptive capacity for policy preferences.

### 5.1.2 Selected Policy Preference Distributions: Voter Social Continuum



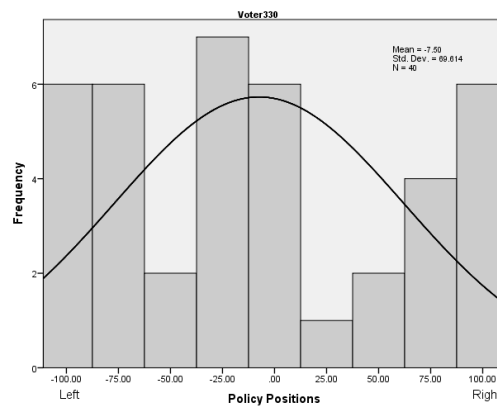
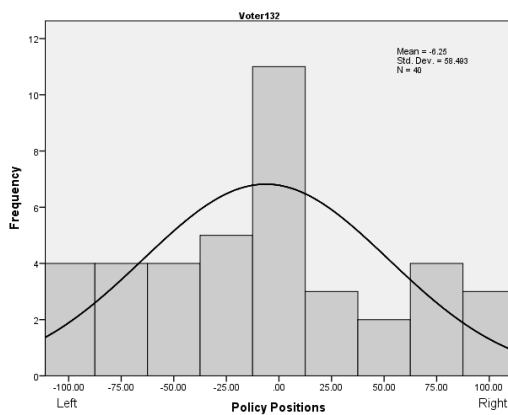
Considering the above relatively un-skewed policy preference distributions for two different individuals (Voter 436 and Voter 028) on the ‘Social’ continuum, while they may share a similar arithmetic mean score (-5.73 and -3.65 respectively), the distributions of their preferences differ considerably. Both individuals would likely describe themselves as ‘Centrists’ or as ‘Centre-Liberal’, yet they would still differ on a number of policy issues.



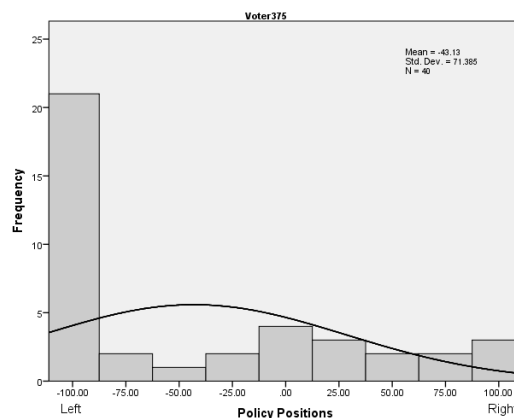
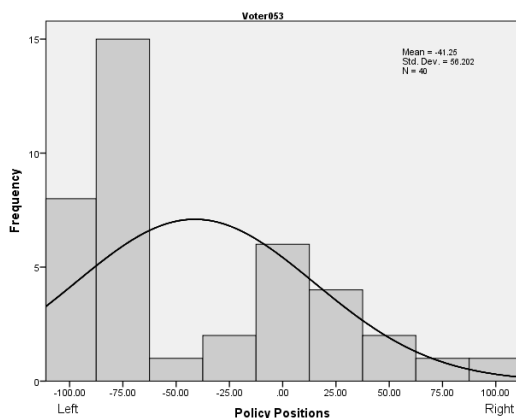
Considering the above negatively-skewed policy preference distributions for two further individuals (Voter 055 and Voter 204), while they may share a similar arithmetic mean score (-60.94 and -60.42 respectively), again the distributions of their preferences differ considerably. Both individuals would likely describe themselves as ‘Liberals’, yet they would disagree on a variety of policy issues.

### 5.1.3 Selected Policy Preference Distributions: Voter Economic Continuum

The same phenomenon may be observed for distributions on the ‘Economic’ continuum too.



While both individuals with the above distributions would likely describe themselves as ‘Centrist’, one may for example favour strong redistributive policies in certain areas, while the other would disagree with them or favour them in other areas.



Both individuals in the above distributions would likely describe themselves as ‘Leftist’ or ‘Left-Leaning’ due to their negative arithmetic mean scores indicating where most of their policies lie. However, as with the other examples, the distribution of the individual preferences that make up their mean score differs significantly. Hence we would have trouble predicting with certainty which policies they would agree to or not, or to what degree, by knowing their Left-Right orientation.

While these are just a few samples to illustrate the principle under investigation, wider consistent observations of these results and the high average Standard Deviation for the survey population suggest this phenomenon is generally valid for the rest of the survey population, confirming the previously postulated theoretical models (*Figures 1-6*) on ideologically incoherent preference distributions, thereby lending significant support to the ‘internal inaccuracy’ thesis.

#### 5.1.4 Principal Component Analysis

Preliminary analysis of both extracted factors using the Pattern Matrix (see [Appendix](#)) to examine correlations with individual policy questions appears to show that the first of the two extracted components encompasses a typical Left-Liberal position on both ‘Social’ and ‘Economic’ dimensions, while the second component suggests a Right-Authoritarian combination as expected. The Component Correlation Matrix below shows both components to have a significant degree of independence from one another as underlying factors of policy choice.

In terms of total variance explained, the two components closely approximating the Left-Right model are evidently the most significant in terms of the percentage of variance explained, and together they cumulatively explain more than a quarter of the total variance. The oblique rotation does not vary the result significantly from a total extraction sum of squared loadings of 19.25 to a rotation sum of 19.62. While 25% may seem like a significant amount of explained variance, the remaining unexplained 75% leaves the Left-Right model with large margin for error, and detracts from its internal accuracy.

*Table 7: Component Correlation Matrix*

Component	1	2
1	1.000	.089
2	.089	1.000

Extraction Method: Principal Component  
Analysis.

Rotation Method: Oblimin with Kaiser  
Normalization.

Table 8: Total Variance Explained – Two-Compound Model

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings [Extracting for 2 factors]			Rotation Sums of Squared Loadings
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	14.305	19.073	19.073	14.305	<b>19.073</b>	19.073	13.982
2	4.944	6.592	25.665	4.944	<b>6.592</b>	<b>25.665</b>	5.638
3	2.609	3.479	29.144				
...	...	...	...				
75	.298	.397	100.000				

Extraction Method: Principal Component Analysis.

## 5.2 HYPOTHESIS 2: EXTERNAL INACCURACY

Table 9: Dyadic Corresponding Policy Error Calculation

Voter			Candidate		Error			
Random ID	AVG Soc.	AVG Econ.	CORR. ID Soc.	CORR. ID Econ.	$\sum  (v_i - c_j) $ Soc.	%Error Soc.	$\sum  (v_i - c_j) $ Econ.	%Error Econ.
66909	-8.33	-3.13	1741	49	1600	16.67%	1175	14.69%
103429	1.04	-3.75	15	4718	1025	10.68%	1375	17.19%
145237	-42.71	-35.63	1377	2668	1100	11.46%	900	11.25%
175384	-34.9	-39.38	1463	369	1875	19.53%	1300	16.25%
193161	-31.25	-6.25	345	1431	1650	17.19%	1075	13.44%
225914	-32.81	-19.38	3133	66	1450	15.10%	1400	17.50%
50325	-13.54	-13.75	3066	63	1625	16.93%	1600	*20.00%
135597	-38.02	-18.13	3274	8	1800	18.75%	850	10.63%
95531	-33.85	-18.75	2362	1640	1525	15.89%	1175	14.69%
72247	-14.58	7.5	3202	50	2500	*26.04%	750	9.38%
<b>Average</b>					1615	<b>16.82%</b>	1160	<b>14.50%</b>

With respect to Hypothesis 2 on the external inaccuracy thesis, the 20 randomly selected dyads of voters and candidates show that for pairs matched up with the exact same mean average scores, there may still be significant differences in their individual policy preferences on corresponding issues. For example, a voter may select a candidate by proximity on the basis that overall they seem to have the same orientation as them on the Left-Right model, but that candidate may not represent the voter's views at all. It would be perfectly plausible for a voter to be completely anti-immigration, while their preferred candidate is entirely in favour of it, and overall by the Left-Right model we could say they are the same in terms of political orientation. Bearing in mind normative representative democratic theory as outlined earlier, this would

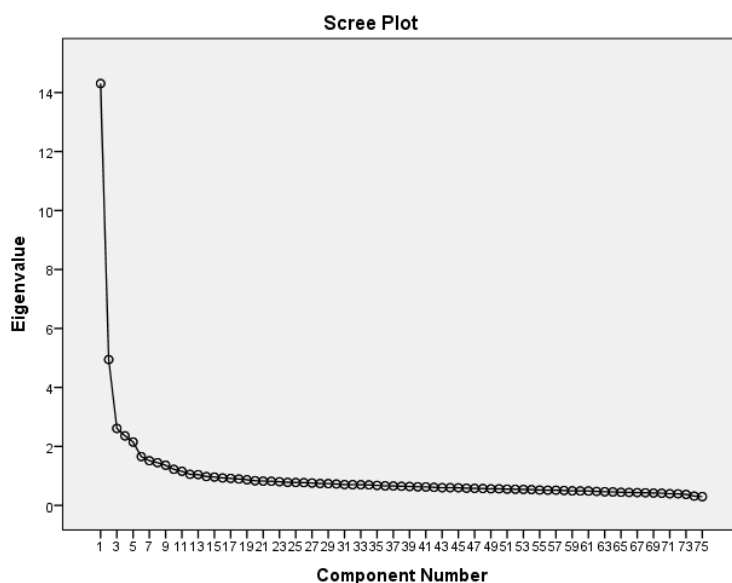
represent a significant error, since voters and candidates should ideally be perfectly matched on all policy preferences.

While the average %Error score for this random sample is less than the specified benchmark (%Error>20%) set for the validation of Hypothesis 2, some individual error scores do exhibit some high error scores (marked \* on the table above). This indicates that in some cases the possibility of a significant mismatch in individual policy preferences is very real and to the detriment of ideal democratic representative theory. With this specific random sample it is hard to either reject or accept the null hypothesis. Overall, the specified degree of error has not been reached, but an investigation of a graphical representation of the continuums (see [Appendix](#)) highlights a significant degree of error, and perhaps a divergence from ideal theory. Strictly speaking, the null hypothesis as initially proposed cannot be rejected. A larger sample is needed to reduce random error and to produce a more conclusive result.

However, what can be salvaged is the principle behind the hypothesis, which aimed to establish the degree of external inaccuracy of the Left-Right model. One must conclude from these results that there *is* a degree of inaccuracy displayed in matching up voters and candidates, albeit not by the amount of error expected.

### 5.3 HYPOTHESIS 3: DIMENSIONALITY EVALUATION

As displayed below, an initial Scree Plot test indicated that while the first two principal components each individually explained the largest amounts of variance of all the components, at least three more components individually explained a significant amount of variance, with those following only adding incremental amounts while disproportionately increasing complexity.



The Principle Component Analysis run on the voter dataset makes a good argument for the inclusion of further components beyond a two-component dimensional model. With respect to the conditions set out in Hypothesis 3, the five-component multidimensional model does meet the criteria regarding accuracy, exceeding the specified benchmark of achieving 25% additional explanatory power as a proportion of the cumulative % variance explained,<sup>14</sup> with under six dimensions.

*Table 10: Total Variance Explained – Five-Component Model*

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings [Extracting for 5 factors]			Rotation Sums of Squared Loadings
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	14.305	19.073	19.073	14.305	<b>19.073</b>	19.073	10.597
2	4.944	6.592	25.665	4.944	<b>6.592</b>	25.665	6.305
3	2.609	3.479	29.144	2.609	<b>3.479</b>	29.144	9.532
4	2.359	3.145	32.289	2.359	<b>3.145</b>	32.289	2.540
5	2.149	2.865	35.154	2.149	<b>2.865</b>	<b>35.154</b>	4.272
6	1.655	2.207	37.361				
...	...	...	...				
75	.298	.397	100.000				

Extraction Method: Principal Component Analysis.

Recalling that the total utility of a model was defined as a function of both accuracy and comprehensibility, the voter choice switch rate (see table below) exceeded the 15% voter choice switch rate metric by 2.5%, showing a degree of plausibility and hence comprehensibility. This rate originates from the voter dataset which presented users with an eight-dimensional “Smarts spider”, and we can infer that for a lower-dimensional model such as the five dimensional model shown above, the level of comprehensibility would be even greater.

Overall, it is evident that a model with up to five dimensions or cleavages proves more accurate in representing individual policy preferences and by extension has potential for more accurately communicating these between voters and candidates. Five-dimensional representations seem sufficiently comprehensible to users and may act as technology-driven ‘heuristic bridges’. We may cautiously reject the null hypothesis ( $H_0$ ) in this case.

Identifying what these additional dimensions could be is beyond the focus of this paper, and such components will be historically and culturally context-dependent across countries. However, in this Swiss

<sup>14</sup> Since  $(35.154 - 25.665) / 35.154 = 0.269 \times 100 = 26.9\%$ .

case study, while *Politools* has suggested a number of cleavages based on expert analysis, the PCA suggests that eight dimensions could be superfluous, and the five principal components left could be slightly different to those suggested. A cursory analysis of the pattern matrix (see [Appendix](#)) suggests that the first and second components address classic Left-Right model social and economic policy respectively, component three seems to reflect views on building and transport, component four appears to deal with issues of defence and foreign policy, while the fifth component goes into more detail on health and drugs policy. Further studies are needed to test and confirm these patterns.

*Table 11: Voter Choice Switch Rate*

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Nein [No]	11464	81.5	81.5	81.5
	Ja [Yes]	2603	18.5	18.5	100.0
	Total	14067	100.0	100.0	

## 6 CONCLUSION

---

This paper set out to test whether the classical Left-Right model remains a useful mode of describing and communicating political preferences, or whether the new opportunities afforded to democracies by VAAs and other technological solutions may prove superior. The model was evaluated by testing three hypotheses on its internal and external accuracy, and on the comparative explanatory power and comprehensibility of a multidimensional model. Overall, the analysis suggests that multidimensional systems can indeed prove superior in their utility as devices for representing and communicating individual political preferences with higher fidelity, while also maintaining an acceptable level of comprehensibility.

Democratic societies should not seek to discard the entrenched classical Left-Right model, as it remains an efficient and accurate-enough mode of preference representation for the purposes of quotidian discourse. Citizens can hardly be expected to describe themselves in five dimensions to each other in everyday conversations. However, for the specific contexts of elections, we should seriously consider the greater degree of accuracy that multidimensional models and their new technological mediums can grant us. These models carry the potential to lead us closer to achieving ideal democratic representation theory, while better informing citizens of their choices.

Should we choose not to consider such a two-tier framework, then we may be condemning ourselves to an average choice.



## 7 BIBLIOGRAPHY

---

Alvarez, R. M., Levin, I., Mair, P. & Trechsel, A., 2014. Party Preferences in the Digital Age: The Impact of Voting Advice Applications. *Party Politics*, 20(2), pp. 227-36.

Arian, A. & Shamir, M., 1983. The Primarily Political Functions of the Left-Right Continuum. *Comparative Politics*, 15(2), pp. 139-58.

Aristotle, 1996. *The Politics and the Constitution of Athens*. Cambridge: Cambridge University Press.

Association of European Conservatives and Reformists (AECR), 2014. *AECR adopts Reykjavik Declaration*. [Online]

Available at: <http://www.aecr.eu/aecr-adopts-reykjavik-declaration/>  
[Accessed 30 April 2014].

Bale, T., Hanley, S. & Szczerbiak, A., 2010. 'May Contain Nuts'? The Reality behind the Rhetoric Surrounding the British Conservatives' New Group in the European Parliament. *The Political Quarterly*, 81(1), pp. 85-98.

Bara, J. & Budge, I., 2001. Party Policy and Ideology: Still New Labour?. *Parliamentary Affairs*, 54(4), pp. 590-606.

Bobbio, N., 1997. *Left & Right: The Significance of a Political Distinction*. Chicago: University of Chicago Press.

Clark, W. R., Golder, M. & Golder, S. N., 2009. *Principles of Comparative Politics*. Washington, DC: CQ Press.

Coker, C., 2009. *War in an Age of Risk*. Cambridge: Polity Press.

Conover, P. J. & Feldman, S., 1984. How People Organize the Political World: A Schematic Model. *American Journal of Political Science*, 28(1), pp. 95-126.

Dalton, R. J., 2006. Social Modernization and the End of Ideology Debate: Patterns of Ideological Polarization. *Japanese Journal of Political Science*, 7(1), pp. 1-22.

Davis, O. A., Hinich, M. J. & Ordeshook, P. C., 1970. An Expository Development of a Mathematical Model of the Electoral Process. *American Political Science Review*, 64(2), pp. 426-48.

Downs, A., 1957. *An Economic Theory of Democracy*. New York: Harper and Row.

Duverger, M., 1959. *Political Parties: Their Organization and Activity in the Modern State*. 2nd ed. London: Methuen & Co.

Endersby, J. & Galatas, S., 1998. British Parties and Spatial Competition: Dimensions of Party Evaluation in the 1992 election. *Public Choice*, 97(3), pp. 363-82.

Evans, G., Heath, A. & Lalljee, M., 1996. Measuring Left-Right and Libertarian-Authoritarian Values in the British Electorate. *The British Journal of Sociology*, 47(1), pp. 93-112.

Fivaz, J. & Nadig, G., 2010. Impact of Voting Advice Applications (VAAs) on Voter Turnout and Their Potential Use for Civic Education. *Policy & Internet*, 2(4), pp. 167-200.

Freire, A. & Kivistik, K., 2013. Western and Non-Western Meanings of the Left-Right Divide Across Four Continents. *Journal of Political Ideologies*, 18(2), pp. 171-99.

Fuchs, D. & Klingemann, H.-D., 1989. The Left-Right Schema. In: M. K. Jennings & J. W. van Deth, eds. *Continuities in Political Action: A Longitudinal Study of Political Orientations in Three Western Democracies*. Berlin and New York: Walter de Gruyter, pp. 203-34.

Fukuyama, F., 1992. *The End of History and the Last Man*. New York: Free Press.

- Goot, M., 2004. Party Convergence Reconsidered. *Australian Journal of Political Science*, 39(1), pp. 49-73.
- Granberg, D., 1985. An Anomaly in Political Perception. *The Public Opinion Quarterly*, 49(4), pp. 504-16.
- Green, J., 2007. When Voters and Parties Agree: Valence Issues and Party Competition. *Political Studies*, Volume 55, pp. 629-55.
- Hagopian, A. et al., 2013. Mortality in Iraq Associated with the 2003–2011 War and Occupation: Findings from a National Cluster Sample Survey by the University Collaborative Iraq Mortality Study. *PLoS Med*, 10(10), pp. 1-15.
- Hinich, M. J. & Enelow, J. M., 1984. *The Spatial Theory of Voting: An Introduction*. Cambridge: Cambridge University Press.
- Hinich, M. J. & Munger, M. C., 1997. *Analytical Politics*. Cambridge; New York: Cambridge University Press.
- Hix, S. & Høyland, B., 2011. *The Political System of the European Union*. Basingstoke: Palgrave Macmillan.
- Hix, S., Noury, A. & Roland, G., 2006. Dimensions of Politics in the European Parliament. *American Journal of Political Science*, 50(2), pp. 494-511.
- Hooghe, L., 2005. Calculation, Community and Cues: Public Opinion on European Integration. *European Union Politics*, 6(4), pp. 419-43.
- Hotelling, H., 1929. Stability in Competition. *Economic Journal*, Volume 39, pp. 41-57.
- Inglehart, R., 1977. *The Silent Revolution*. Princeton, NJ: Princeton University Press.
- Kelly, P. J., 2005. *Liberalism*. Cambridge: Polity.
- Kim, J. O. & Mueller, C. W., 1978. *Introduction to Factor Analysis: What it Is and How to Do It*. Beverly Hills, CA: Sage.
- Kitschelt, H. & Hellemans, S., 1990. *Beyond the European Left: Ideology and Political Action in the Belgian Ecology Parties*. Durham, NC: Duke University Press.
- Kline, P., 2002. *An easy Guide to Factor Analysis*. London: Routledge.
- Klingemann, H., Hoffbert, R. & Budge, I., 1994. *Parties, Policies and Democracy*. Boulder, CO: Westview Press.
- Knutsen, O., 1995. Value Orientations, Political Conflicts and Left-Right Identification: A Comparative Study. *European Journal of Political Research*, Volume 28, pp. 63-95.
- Ladner, A. & Fivaz, J., 2012. Voting Advice Applications. In: N. Kersting, ed. *Electronic Democracy: The World of Political Science - The development of the Discipline Book Series*. Opladen: Barbara Budrich Publishers, pp. 177-198.
- Ladner, A., Fivaz, J. & Pianzola, J., 2012. Voting Advice Applications and Party Choice: Evidence from Smartvote Users in Switzerland. *International Journal of Electronic Governance*, 5(3), pp. 367-87.
- Laponce, J., 1981. *Left and Right: The Topography of Political Perceptions*. Toronto: University of Toronto Press.
- Laver, M. & Budge, I., 1992. *Party Policy and Government Coalitions*. Basingstoke: Macmillan.
- Lefevre, J. & Walgrave, S., 2014 (forthcoming). A Perfect Match? The Impact of Statement Selection on Voting Advice Applications' Ability to Match Voters and Parties. *Electoral Studies*.
- Lidderdale, D., 1951. *Le Parlement Français*. London: Hansard Society.

- Lipset, S. M. & Rokkan, S., 1967. *Party Systems and Voter Alignments: Cross-National Perspectives*. New York: Collier MacMillan.
- Mair, P., 2007. Left-Right Orientations. In: H. Klingemann & R. J. Dalton, eds. *The Oxford Handbook of Political Behaviour*. Oxford; New York: Oxford University Press, pp. 206-22.
- Mair, P. & van Biezen, I., 2001. Party Membership in Twenty European Democracies, 1980-2000. *Party Politics*, 7(1), pp. 5-21.
- Mavrogordatos, G. T., 1987. Downs Revisited: Spatial Models of Party Competition and Left: Right Measurements. *International Political Science Review*, 8(4), pp. 333-42.
- McElroy, G. & Benoit, K., 2010. Party and Group Affiliation in the European Parliament. *British Journal of Political Science*, 40(2), pp. 377-98.
- McKenzie, R. T. & Silver, A., 1968. *Angels in Marble: Working Class Conservatives in Urban England*. Chicago: University of Chicago Press.
- Middendorp, C. P., 1989. Models for Predicting the Dutch Vote along the Left-Right and the Libertarianism-Authoritarianism Dimensions. *International Political Science Review*, 10(4), pp. 279-308.
- Müller, B., 2013. *Schweiz, 11. März 2012 : 6 Wochen Ferien für alle*. [Online]  
Available at: <http://www.sudd.ch/event.php?lang=en&id=ch032012>  
[Accessed 10 May 2014].
- Müller, B., 2013. *Schweiz, 27. September 2009 : Befristete Zusatzfinanzierung der Invalidenversicherung durch Anhebung der Mehrwertsteuersätze*. [Online]  
Available at: <http://www.sudd.ch/event.php?lang=en&id=ch042009>  
[Accessed 10 May 2014].
- Olson, M., 1965. *The Logic of Collective Action: Public Goods and the Theory of Groups*. Cambridge, MA: Harvard University Press.
- Otjes, S. & Louwerse, T., 2014 (forthcoming). Spatial Models in Voting Advice Applications. *Electoral Studies*.
- Parkin, F., 1967. Working-Class Conservatives: A Theory of Political Deviance. *British Journal of Sociology*, Volume 18, pp. 278-90.
- Pattie, C. J. & Johnston, R. J., 1989. Establishment and Detail? The Changing Relationship between Voting, Class, Attitudes and the Core Periphery Division of Great Britain 1979-1987. *Transactions of the Institute of British Geographers*, Volume 15, pp. 205-26.
- Pintor, R. L., Gratschew, M. & Sullivan, K., 2002. *Voter Turnout Rates from a Comparative Perspective*, Stockholm: International Institute for Democracy and Electoral Assistance (International IDEA).
- Pitkin, H. F., 1967. *The Concept of Representation*. Berkeley and Los Angeles, CA: University of California Press.
- Politools, 2011. *Methodenbeschreibung – Smartspider-Grafiken*. [Online]  
Available at: [http://smartvote.ch/downloads/methodology\\_smartspider\\_de\\_CH.pdf](http://smartvote.ch/downloads/methodology_smartspider_de_CH.pdf)  
[Accessed 10 May 2014].
- Politools, 2011. *Methodenbeschreibung – Smartvote Wablempfehlung*. [Online]  
Available at: [http://smartvote.ch/downloads/methodology\\_recommendation\\_de\\_CH.pdf](http://smartvote.ch/downloads/methodology_recommendation_de_CH.pdf)  
[Accessed 10 May 2014].
- Politools, 2014. *Politools FTP Server*. [Online]  
Available at: <ftp://ftp.politools.net/>  
[Accessed 3 March 2014].

- Politoools, 2014. *Smartvote*. [Online]  
Available at: [http://www.smartvote.ch/11\\_ch\\_nr/election/index](http://www.smartvote.ch/11_ch_nr/election/index)  
[Accessed 10 May 2014].
- Powell, G. B., 2000. *Elections as Instruments of Democracy: Majoritarian and Proportional Visions*. New Haven, CT: Yale University Press.
- Rokeach, M., 1973. *The Nature of Human Values*. New York: Free Press.
- Rosenthal, H. & Sen, S., 1977. Electoral Participation in the French Fifth Republic. *American Political Science Review*, Volume 67, pp. 29-54.
- Schofield, N., Miller, G. & Martin, A., 2003. Critical Elections and Political Realignments in the USA: 1860-2000. *Political Studies*, Volume 51, pp. 217-40.
- Schwarz, N., 1999. Self-Reports: How the Questions Shape the Answers. *American Psychologist*, 54(2), pp. 93-105.
- Shin, D. C. & Jhee, B.-K., 2005. How does Democratic Regime Change Affect Mass Political Ideology? A Case Study of South Korea in Comparative Perspective. *International Political Science Review*, 26(4), pp. 381-96.
- Smithies, A., 1941. Optimum Location in Spatial Competition. *Journal of Political Economy*, 49(3), pp. 423-39.
- Steenbergen, M. & Jones, B. S., 2002. Modeling Multilevel Data Structures. *American Journal of Political Science*, Volume 46, pp. 218-37.
- Strack, D. F., Martin, L. L. & Schwarz, N., 2006. Priming and Communication: Social Determinants of Information use in Judgments of Life Satisfaction. *European Journal of Social Psychology*, 18(5), pp. 429-42.
- Todosijević, B., 2004. The Hungarian Voter: Left-Right Dimension as a Clue to Policy Preferences. *International Political Science Review*, 25(4), pp. 411-33.
- United Nations Assistance Mission in Afghanistan, 2012. *Afghanistan: Annual Report 2012*, Kabul: UNAMA.
- van der Eijk, C. & Niemöller, B., 1983. *Electoral Change in the Netherlands: Empirical Results and Methods of Measurement*. Amsterdam: CT Press.
- Vogt, W. P., 1993. *Dictionary of Statistics and Methodology: A Nontechnical Guide for the Social Scientist*. Newbury Park, CA: Sage.
- Wagner, M. & Ruusuvirta, O., 2012. Matching Voters to Parties: Voting Advice Applications and Models of Party Choice. *Acta Politica*, Volume 47, pp. 400-22.
- Weber, T., 2007. Campaign Effects and Second-Order Cycles: A Top-Down Approach to European Parliament Elections. *European Union Politics*, 8(4), pp. 509-36.
- White, J., 2011. Left and Right as Political Resources. *Journal of Political Ideologies*, 16(2), pp. 123-44.
- Zechmeister, E., 2006. What's Left and Who's Right? A Q-method Study of Individual and Contextual Influences on the Meaning of Ideological Labels. *Political Behaviour*, 28(2), pp. 151-73.

## 8 APPENDIX

### 8.1 SMARTVOTE INPUT CODING SCHEME

Answer Options	Corresponding values
<i>Standardfragen [Standard questions]</i> <sup>15</sup>	„Ja“ [Agree]
	„Eher ja“ [Moderately agree]
	„Eher nein“ [Moderately disagree]
	„Nein“ [Disagree]
<i>Budgetfragen [Budgetary questions]</i>	„Deutlich mehr ausgeben (++)“ [Spend significantly more]
	„Mehr ausgeben (+)“ [Spend more]
	„Gleich viel ausgeben (=)“ [Spend the same amount]
	„Weniger ausgeben (-)“ [Spend less]
	„Deutlich weniger ausgeben (--)" [Spend significantly less]

Source: (Politools, 2011)

### 8.2 HYPOTHESIS 1

#### 8.2.1 Coding Criteria: Social vs. Economic Continuums

Variable/Survey Answer number	Survey Question	Social	Economic	Sign (L-, R+)
sv_answer_1	Befürworten Sie eine Erhöhung des Rentenalters für Frauen und Männer (z.B. auf 67 Jahre)?		X	+
sv_answer_2	Finden Sie es grundsätzlich richtig, dass der Staat die Fremdbetreuung von Kindern finanziell unterstützt (mit Steuerabzügen oder Subventionen)?	X		-
sv_answer_3	Würden Sie bei der Arbeitslosenversicherung die Einführung degressiver Taggelder begrüßen (d.h. die Höhe der Taggelder nimmt mit zunehmender Bezugsdauer ab)?		X	+
sv_answer_4	Soll zusätzlich zur bestehenden Mutterschaftsversicherung ein 24-wöchiger Elternurlaub ("Elternzeit") eingeführt werden?		X	-
sv_answer_5	Sollen die staatlichen Unterstützungsleistungen für Familien mit tiefem Einkommen ausgebaut werden?		X	-

<sup>15</sup> Note that here the German “Ja” is translated to [Agree], since there is no appropriate English equivalent to “Eher ja” or “Eher nein”, and the survey consisted of asking respondents to rank their degree of agreement for specific statements.

sv_answer_6	Die Invalidenversicherung spricht bei nicht objektiv nachweisbaren Schmerzstörungen (z.B. als Folge eines Schleudertraumas) keine IV-Renten mehr zu. Finden Sie dies richtig?		X	+
sv_answer_7	Würden Sie eine nationale Spitalplanung befürworten, die auch zur Schliessung von Spitälern führen kann?			NA
sv_answer_8	Eine Volksinitiative will für die Grundversicherung eine öffentliche Einheitskrankenkasse einführen. Unterstützen Sie dieses Anliegen?		X	-
sv_answer_9	Finden Sie es richtig, dass einzelne ärztliche Leistungen der Komplementärmedizin (Alternativmedizin) wieder von der Grundversicherung vergütet werden?		X	-
sv_answer_10	Sollen Personen, die sich keinem Ärztenetzwerk (Managed Care) anschliessen wollen und nach wie vor die freie Arztwahl vorziehen, einen höheren Selbstbehalt bezahlen?		X	+
sv_answer_11	Befürworten Sie die Harmonisierung von Lehrplänen zwischen den Kantonen (z.B. durch die Projekte Lehrplan 21 oder PER)?			NA
sv_answer_12	Finden Sie es richtig, wenn Schulen Dispense aus religiösen Gründen für einzelne Fächer oder Veranstaltungen bewilligen (z.B. Turn-/Schwimmunterricht, Schullager oder Sexualkundeunterricht)?	X		-
sv_answer_13	Gemäss dem Konzept der integrativen Schule werden Kinder mit Lernschwierigkeiten oder Behinderungen grundsätzlich in regulären Schulklassen unterrichtet. Befürworten Sie dies?	X		-
sv_answer_14	Sollte der wirtschaftliche Nutzen von Forschungsprojekten bei der Vergabe von Fördergeldern des Bundes stärker berücksichtigt werden?			NA
sv_answer_15	Sind Sie dafür, dass der Status von Sans-Papiers durch eine einmalige kollektive Erteilung von Aufenthaltsbewilligungen legalisiert wird?	X		-
sv_answer_16	Würden Sie es befürworten, wenn für Ausländer/innen, die seit mindestens zehn Jahren in der Schweiz leben, gesamtschweizerisch das Stimm- und Wahlrecht auf Gemeindeebene eingeführt würde?	X		-
sv_answer_17	Soll sich der Staat finanziell stärker für die Integration von Ausländer/innen engagieren?	X	X	-
sv_answer_18	Soll der Zugang zur erleichterten Einbürgerung durch den Bund erschwert werden?	X		+

sv_answer_19	Soll die Schweiz vermehrt Flüchtlingsgruppen aufnehmen, für die das UN-Flüchtlingshilfswerk (UNHCR) Aufnahmeland sucht (sog. Kontingentsflüchtlinge)?	X		-
sv_answer_20	Eine Volksinitiative möchte die Zuwanderung regulieren und das migrationsbedingte Bevölkerungswachstum auf 0.2% pro Jahr beschränken. Unterstützen Sie diese Initiative?	X	X	+
sv_answer_21	Sollen gleichgeschlechtliche Paare, die in eingetragener Partnerschaft leben, Kinder adoptieren dürfen?	X		-
sv_answer_22	Soll der Konsum von weichen und harten Drogen sowie deren Besitz für den Eigengebrauch legalisiert werden?	X		-
sv_answer_23	Der Schwangerschaftsabbruch ist in der Schweiz in den ersten zwölf Wochen der Schwangerschaft straflos möglich. Finden Sie das richtig?	X		-
sv_answer_24	Würden Sie es befürworten, wenn in der Schweiz die direkte aktive Sterbehilfe durch einen Arzt straffrei möglich wäre?	X		-
sv_answer_25	Würden Sie die Einführung einer Frauenquote in Verwaltungsräten börsenkotierter Unternehmen befürworten?		X	-
sv_answer_26	Die Schweiz kennt relativ strenge Regelungen bei der Fortpflanzungsmedizin. Sollten diese gelockert werden?	X		+
sv_answer_27	Soll die Möglichkeit der Pauschalbesteuerung von ausländischen Bürger/innen in allen Kantonen abgeschafft werden?		X	-
sv_answer_28	Würden Sie es begrüßen, wenn der Steuerwettbewerb zwischen den Kantonen grundsätzlich stärker beschränkt würde?		X	-
sv_answer_29	Eine Volksinitiative möchte die Heiratsstrafe abschaffen. Ehepaare sollen als Wirtschaftsgemeinschaft betrachtet werden und ihr Einkommen gemeinsam versteuern. Unterstützen Sie dies?	X	X	-
sv_answer_30	Haben für Sie Senkungen der Bundessteuern in den nächsten vier Jahren Priorität?		X	+
sv_answer_31	Soll der Erwerb von selbst bewohntem Wohneigentum durch Steuerabzüge für das Bausparen zusätzlich gefördert werden?		X	+
sv_answer_32	Befürworten Sie die Einführung eines für alle Arbeitnehmenden gültigen Mindestlohnes von 3'800 CHF (für eine 100%-Stelle / 40h-Woche)?		X	-



sv_answer_33	Sind Sie für eine vollständige Liberalisierung der Ladenöffnungszeiten (Geschäfte können die Öffnungszeiten nach freiem Ermessen festlegen)?	X	X	+
sv_answer_34	Sollen Unternehmen mit mehr als 250 Beschäftigten verpflichtet werden, behinderten Personen Arbeitsplätze anzubieten?		X	-
sv_answer_35	Würden Sie die Einführung des automatischen Austausches von Bankkundendaten zwischen der Schweiz und ausländischen Steuerbehörden befürworten?	X		-
sv_answer_36	Soll die Post verpflichtet werden, ein flächendeckendes Poststellennetz aufrechtzuerhalten?		X	-
sv_answer_37	Eine Volksinitiative will festlegen, dass innerhalb eines Unternehmens der höchste Lohn maximal dem Zwölffachen des kleinsten Lohnes entsprechen darf (1:12-Initiative). Unterstützen Sie dieses Anliegen?		X	-
sv_answer_38	Der Bundesrat will für Grossbanken verschärfte Regulierungen einführen, die über die international üblichen Vorschriften hinausgehen (sogenannte		X	-
sv_answer_39	Heute werden 1% aller Direktzahlungen zur Förderung der Bio-Produktion aufgewendet. Sollte dieser Anteil im Rahmen der Agrarpolitik 2014-2017 zulasten der konventionellen Landwirtschaftsbetriebe erhöht werden?	X		-
sv_answer_40	Soll in der Schweiz anstelle des freien Milchmarktes wieder eine zentrale Mengensteuerung der Milchproduktion eingeführt werden?		X	-
sv_answer_41	Soll das geltende Moratorium für gentechnisch veränderte Pflanzen und Tiere in der Schweizer Landwirtschaft über 2013 hinaus verlängert werden?	X	X	-
sv_answer_42	Der Bundesrat möchte bis spätestens 2034 aus der Atomenergie aussteigen (d.h. die bestehenden Atomkraftwerke werden stillgelegt und keine neuen mehr gebaut). Unterstützen Sie dieses Vorhaben?	X		-
sv_answer_43	Befürworten Sie die Einführung einer CO2-Abgabe auf Treibstoffe, wenn die Schweiz die eigenen Klimaschutzziele nicht erreicht?	X	X	-
sv_answer_44	Eine Volksinitiative fordert, dass die Gesamtfläche der Bauzonen in der Schweiz für die nächsten 20 Jahre auf dem heutigen Stand begrenzt wird. Befürworten Sie dieses Anliegen?	X		-
sv_answer_45	Befürworten Sie eine Lockerung der Schutzbestimmungen für Grossraubtiere (Luchs, Wolf, Bär)?	X		+



sv_answer_46	Sollen für den Bau und den Ausbau von Wind-, Solar- und Wasserkraftwerken die Vorschriften des Umwelt- und Landschaftsschutzes gelockert werden?		X	+
sv_answer_47	Sollen sich Bahnfahrer/-innen in Zukunft durch höhere Billettpreise stärker an den Kosten des Ausbaus und Unterhalts des Schienennetzes beteiligen?			NA
sv_answer_48	Sollen stark befahrene Autobahnabschnitte (z.B. Bern-Zürich oder Lausanne-Genf) ausgebaut werden?	X		+
sv_answer_49	Würden Sie es befürworten, wenn ab der Eröffnung der NEAT (2017) der Gotthard-Strassentunnel für den alpenquerenden Lastwagenverkehr gesperrt werden würde?	X		-
sv_answer_50	Eine Volksinitiative verlangt, dass der Bundesrat direkt vom Volk gewählt werden soll. Befürworten Sie dieses Anliegen?			NA
sv_answer_51	Sollen Volksinitiativen für ungültig erklärt werden, wenn sie gegen die Europäische Menschenrechtskonvention (EMRK) verstossen?	X		-
sv_answer_52	Sollte die Finanzierung von Parteien sowie von Wahl- und Abstimmungskampagnen vollständig offengelegt werden müssen?			NA
sv_answer_53	Sollen Schweizer Jugendliche frei zwischen einem Militär- oder einem zivilen Ersatzdienst wählen können?	X		-
sv_answer_54	Der Bundesrat schlägt vor, den Bestand der Armee von heute 190'000 auf 80'000 Mann zu reduzieren. Unterstützen Sie diesen Vorschlag?	X		-
sv_answer_55	In den letzten Jahren wurden die Regeln zum Erwerb und Besitz von Waffen verschärft. Begrüssen Sie diese Entwicklung?	X		-
sv_answer_56	Soll das Jugendstrafrecht in Zukunft mehr Gewicht auf das Verbüssen längerer Haftstrafen in geschlossenen Anstalten als auf Resozialisierungsmassnahmen legen?	X		+
sv_answer_57	Finden Sie es richtig, dass die Armee polizeiliche Aufgaben im Innern wahrnimmt (z.B. bei der Bewachung von Botschaften und Konsulaten, beim Grenzschutz oder bei Grossanlässen wie dem WEF)?	X		+
sv_answer_58	Sollen die Befugnisse der Sicherheitsbehörden zur präventiven Überwachung des Post-, Telefon- und E-Mail-Verkehrs ausgeweitet werden?	X		+
sv_answer_59	Soll die Schweiz innerhalb der nächsten vier Jahre EU-Beitrittsverhandlungen aufnehmen?	X		-
sv_answer_60	Soll die Schweiz ein Agrarfreihandelsabkommen mit der EU abschliessen?	X	X	+
sv_answer_61	Befürworten Sie das bestehende Personenfreizügigkeitsabkommen mit der EU?	X	X	-

sv_answer_62	Die Schweizer Armee kann heute zum Selbstschutz bewaffnet bei friedenserhaltenden Einsätzen unter UNO- oder OSZE-Mandat im Ausland eingesetzt werden. Befürworten Sie dies?	X		-
sv_answer_63	Die Schweiz verfolgt seit einigen Jahren eine aktivere, öffentlichere Aussenpolitik, die sich weniger an der strikten Neutralität orientiert. Begrüssen Sie dies?	X		-
sv_answer_64	Soll die Einhaltung der Menschenrechte bei wirtschaftlichen Abkommen mit anderen Ländern (z.B. Freihandelsabkommen) stärker berücksichtigt werden?		X	-
sv_answer_65	Öffentliche Sicherheit	X	X	+
sv_answer_66	Landesverteidigung	X	X	+
sv_answer_67	Entwicklungshilfe	X	X	-
sv_answer_68	Öffentlicher Verkehr	X	X	-
sv_answer_69	Strassenverkehr (Bau und Unterhalt)	X	X	+
sv_answer_70	Umweltschutz und Raumordnung	X	X	-
sv_answer_71	Bildung und Forschung	X	X	-
sv_answer_72	Kulturförderung	X	X	-
sv_answer_73	Sozialversicherungen und Sozialpolitik	X	X	-
sv_answer_74	Landwirtschaft	X	X	+
sv_answer_75	Finanzausgleich / Abbau kantonalер Unterschiede	X	X	-
N Total		48	40	Pos.: 21 Neg.: 48 NA: 6

Source: (Politools, 2014)

### 8.2.2 Coding Criteria: Directional Effect

Continuum	Factor	Ideological Affinity <sup>16</sup>	
		Left	Right
Social	Open Foreign Policy	+	-
	Law&Order	-	+
	Restrictive Immigration Policy	-	+
	Liberal Society	+	-
	Greater Environmental Protection	+	-
Economic	Liberal Economic Policy	-	+
	Restricted Financial Policy	-	+
	Greater Social State	+	-

### 8.2.3 KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	.959
Approx. Chi-Square	156611.054
Bartlett's Test of Sphericity	df
	2775
	Sig.
	.000

### 8.2.4 Pattern Matrix

Pattern Matrix <sup>a</sup>		
	Component	
	1	2
Sollen Volksinitiativen für ungültig erklärt werden, wenn sie gegen die Europäische Menschenrechtskonvention (EMRK) verstossen?	.679	-.132
Soll die Schweiz vermehrt Flüchtlingsgruppen aufnehmen, für die das UN-Flüchtlingshilfswerk (UNHCR) Aufnahmeländer sucht (sog. Kontingentsflüchtlinge)?	.675	-.041
Würden Sie es befürworten, wenn für Ausländer/innen, die seit mindestens zehn Jahren in der Schweiz leben, gesamtschweizerisch das Stimm- und Wahlrecht auf Gemeindeebene eingeführt würde?	.653	-.084
Sind Sie dafür, dass der Status von Sans-Papiers durch eine einmalige kollektive Erteilung von Aufenthaltsbewilligungen legalisiert wird?	.653	.016

<sup>16</sup> The sign attributed indicates the direction in which a survey question answered to the affirmative will move an individual's mean score on a Left-Right continuum. For example for the "Restrictive Immigration Policy" category, an affirmative answer to a survey question falling under that category will move an individual's mean score towards the "Right" extreme, and a negative answer will move their score in the opposite direction towards the "Left" extreme.

Entwicklungshilfe	.652	.145
Soll der Zugang zur erleichterten Einbürgerung durch den Bund erschwert werden?	-.639	.260
Die Schweiz verfolgt seit einigen Jahren eine aktivere, öffentlichere Aussenpolitik, die sich weniger an der strikten Neutralität orientiert. Begrüssen Sie dies?	.638	-.221
Landesverteidigung	-.632	.080
Soll sich der Staat finanziell stärker für die Integration von Ausländer/innen engagieren?	.629	.039
Befürworten Sie das bestehende Personenfreizügigkeitsabkommen mit der EU?	.610	-.434
Eine Volksinitiative möchte die Zuwanderung regulieren und das migrationsbedingte Bevölkerungswachstum auf 0.2% pro Jahr beschränken. Unterstützen Sie diese Initiative?	-.603	.393
Befürworten Sie die Einführung einer CO2-Abgabe auf Treibstoffe, wenn die Schweiz die eigenen Klimaschutzziele nicht erreicht?	.593	.089
Der Bundesrat schlägt vor, den Bestand der Armee von heute 190'000 auf 80'000 Mann zu reduzieren. Unterstützen Sie diesen Vorschlag?	.584	-.161
Sollte die Finanzierung von Parteien sowie von Wahl- und Abstimmungskampagnen vollständig offengelegt werden müssen?	.575	.058
Soll das Jugendstrafrecht in Zukunft mehr Gewicht auf das Verbüssen längerer Haftstrafen in geschlossenen Anstalten als auf Resozialisierungsmassnahmen legen?	-.570	.071
Sollen Schweizer Jugendliche frei zwischen einem Militär- oder einem zivilen Ersatzdienst wählen können?	.568	-.070
Finden Sie es grundsätzlich richtig, dass der Staat die Fremdbetreuung von Kindern finanziell unterstützt (mit Steuerabzügen oder Subventionen)?	.549	-.088
Sozialversicherungen und Sozialpolitik	.534	.313
Soll die Einhaltung der Menschenrechte bei wirtschaftlichen Abkommen mit anderen Ländern (z.B. Freihandelsabkommen) stärker berücksichtigt werden?	.533	.202
Der Bundesrat möchte bis spätestens 2034 aus der Atomenergie aussteigen (d.h. die bestehenden Atomkraftwerke werden stillgelegt und keine neuen mehr gebaut). Unterstützen Sie dieses Vorhaben?	.532	.244
Würden Sie die Einführung des automatischen Austausches von Bankkundendaten zwischen der Schweiz und ausländischen Steuerbehörden befürworten?	.529	.199
Kulturförderung	.524	.110
Soll die Schweiz innerhalb der nächsten vier Jahre EU-Beitrittsverhandlungen aufnehmen?	.518	-.067
Soll zusätzlich zur bestehenden Mutterschaftsversicherung ein 24-wöchiger Elternurlaub (	.508	.218
In den letzten Jahren wurden die Regeln zum Erwerb und Besitz von Waffen verschärft. Begrüssen Sie diese Entwicklung?	.487	-.001
Umweltschutz und Raumordnung	.479	.263
Heute werden 1% aller Direktzahlungen zur Förderung der Bio-Produktion aufgewendet. Sollte dieser Anteil im Rahmen der Agrarpolitik 2014-2017 zulasten der konventionellen Landwirtschaftsbetriebe erhöht werden?	.476	.101
Würden Sie es begrüßen, wenn der Steuerwettbewerb zwischen den Kantonen grundsätzlich stärker beschränkt würde?	.474	.372
Sollen die staatlichen Unterstützungsleistungen für Familien mit tiefem Einkommen ausgebaut werden?	.457	.350
Sollen stark befahrene Autobahnabschnitte (z.B. Bern-Zürich oder Lausanne-Genf) ausgebaut werden?	-.450	-.219
Soll die Möglichkeit der Pauschalbesteuerung von ausländischen Bürger/innen in allen Kantonen abgeschafft werden?	.448	.273
Sollen gleichgeschlechtliche Paare, die in eingetragener Partnerschaft leben, Kinder adoptieren dürfen?	.439	-.130

Würden Sie die Einführung einer Frauenquote in Verwaltungsräten börsenkotierter Unternehmen befürworten?	.420	.273
Strassenverkehr (Bau und Unterhalt)	-.418	-.168
Sollte der wirtschaftliche Nutzen von Forschungsprojekten bei der Vergabe von Fördergeldern des Bundes stärker berücksichtigt werden?	-.415	-.046
Öffentlicher Verkehr	.413	.174
Soll der Konsum von weichen und harten Drogen sowie deren Besitz für den Eigengebrauch legalisiert werden?	.411	-.228
Die Invalidenversicherung spricht bei nicht objektiv nachweisbaren Schmerzstörungen (z.B. als Folge eines Schleudertraumas) keine IV-Renten mehr zu. Finden Sie dies richtig?	-.410	-.297
Haben für Sie Senkungen der Bundessteuern in den nächsten vier Jahren Priorität?	-.408	-.074
Eine Volksinitiative will für die Grundversicherung eine öffentliche Einheitskrankenkasse einführen. Unterstützen Sie dieses Anliegen?	.406	.291
Würden Sie bei der Arbeitslosenversicherung die Einführung degressiver Taggelder begrüßen (d.h. die Höhe der Taggelder nimmt mit zunehmender Bezugsdauer ab)?	-.385	-.208
Sollen Unternehmen mit mehr als 250 Beschäftigten verpflichtet werden, behinderten Personen Arbeitsplätze anzubieten?	.372	.367
Öffentliche Sicherheit	-.361	.100
Eine Volksinitiative verlangt, dass der Bundesrat direkt vom Volk gewählt werden soll. Befürworten Sie dieses Anliegen?	-.340	.187
Befürworten Sie die Harmonisierung von Lehrplänen zwischen den Kantonen (z.B. durch die Projekte Lehrplan 21 oder PER)?	.333	-.148
Gemäss dem Konzept der integrativen Schule werden Kinder mit Lernschwierigkeiten oder Behinderungen grundsätzlich in regulären Schulklassen unterrichtet. Befürworten Sie dies?	.329	.024
Der Bundesrat will für Grossbanken verschärfte Regulierungen einführen, die über die international üblichen Vorschriften hinausgehen (sogenannte	.325	.141
Bildung und Forschung	.325	-.112
Befürworten Sie eine Lockerung der Schutzbestimmungen für Grossraubtiere (Luchs, Wolf, Bär)?	-.295	.020
Würden Sie es befürworten, wenn ab der Eröffnung der NEAT (2017) der Gotthard-Strassentunnel für den alpenquerenden Lastwagenverkehr gesperrt werden würde?	.284	.267
Finden Sie es richtig, dass die Armee polizeiliche Aufgaben im Innern wahrnimmt (z.B. bei der Bewachung von Botschaften und Konsulaten, beim Grenzschutz oder bei Grossanlässen wie dem WEF)?	-.267	.057
Sollen die Befugnisse der Sicherheitsbehörden zur präventiven Überwachung des Post-, Telefon- und E-Mail-Verkehrs ausgeweitet werden?	-.240	.080
Soll der Erwerb von selbst bewohntem Wohneigentum durch Steuerabzüge für das Bausparen zusätzlich gefördert werden?	-.191	.088
Finden Sie es richtig, wenn Schulen Dispense aus religiösen Gründen für einzelne Fächer oder Veranstaltungen bewilligen (z.B. Turn-/Schwimmunterricht, Schullager oder Sexualkundeunterricht)?	.187	.062
Eine Volksinitiative möchte die Heiratsstrafe abschaffen. Ehepaare sollen als Wirtschaftsgemeinschaft betrachtet werden und ihr Einkommen gemeinsam versteuern. Unterstützen Sie dies?	-.032	.027
Landwirtschaft	-.100	.547
Soll die Post verpflichtet werden, ein flächendeckendes Poststellennetz aufrechtzuerhalten?	.090	.529
Eine Volksinitiative will festlegen, dass innerhalb eines Unternehmens der höchste Lohn maximal dem Zwölfwachen des kleinsten Lohnes entsprechen darf (1:12-Initiative). Unterstützen Sie dieses Anliegen?	.370	.523

Soll die Schweiz ein Agrarfreihandelsabkommen mit der EU abschliessen?	.254	-.512
Soll in der Schweiz anstelle des freien Milchmarktes wieder eine zentrale Mengensteuerung der Milchproduktion eingeführt werden?	-.002	.511
Sind Sie für eine vollständige Liberalisierung der Ladenöffnungszeiten (Geschäfte können die Öffnungszeiten nach freiem Ermessen festlegen)?	-.102	-.508
Soll das geltende Moratorium für gentechnisch veränderte Pflanzen und Tiere in der Schweizer Landwirtschaft über 2013 hinaus verlängert werden?	.197	.474
Befürworten Sie die Einführung eines für alle Arbeitnehmenden gültigen Mindestlohnes von 3'800 CHF (für eine 100%-Stelle / 40h-Woche)?	.430	.457
Befürworten Sie eine Erhöhung des Rentenalters für Frauen und Männer (z.B. auf 67 Jahre)?	-.094	-.451
Würden Sie eine nationale Spitalplanung befürworten, die auch zur Schliessung von Spitälern führen kann?	.143	-.396
Die Schweiz kennt relativ strenge Regelungen bei der Fortpflanzungsmedizin. Sollten diese gelockert werden?	.048	-.367
Sollen sich Bahnfahrer/innen in Zukunft durch höhere Billettpreise stärker an den Kosten des Ausbaus und Unterhalts des Schienennetzes beteiligen?	-.202	-.337
Eine Volksinitiative fordert, dass die Gesamtfläche der Bauzonen in der Schweiz für die nächsten 20 Jahre auf dem heutigen Stand begrenzt wird. Befürworten Sie dieses Anliegen?	.242	.321
Der Schwangerschaftsabbruch ist in der Schweiz in den ersten zwölf Wochen der Schwangerschaft straflos möglich. Finden Sie das richtig?	.245	-.314
Finden Sie es richtig, dass einzelne ärztliche Leistungen der Komplementärmedizin (Alternativmedizin) wieder von der Grundversicherung vergütet werden?	.251	.303
Die Schweizer Armee kann heute zum Selbstschutz bewaffnet bei friedenserhaltenden Einsätzen unter UNO- oder OSZE-Mandat im Ausland eingesetzt werden. Befürworten Sie dies?	.279	-.291
Sollen Personen, die sich keinem Ärztenetzwerk (Managed Care) anschliessen wollen und nach wie vor die freie Arztwahl vorziehen, einen höheren Selbstbehalt bezahlen?	.071	-.254
Würden Sie es befürworten, wenn in der Schweiz die direkte aktive Sterbehilfe durch einen Arzt straffrei möglich wäre?	.190	-.239
Finanzausgleich / Abbau kantonalen Unterschiede	.175	.187
Sollen für den Bau und den Ausbau von Wind-, Solar- und Wasserkraftwerken die Vorschriften des Umwelt- und Landschaftsschutzes gelockert werden?	-.008	-.095

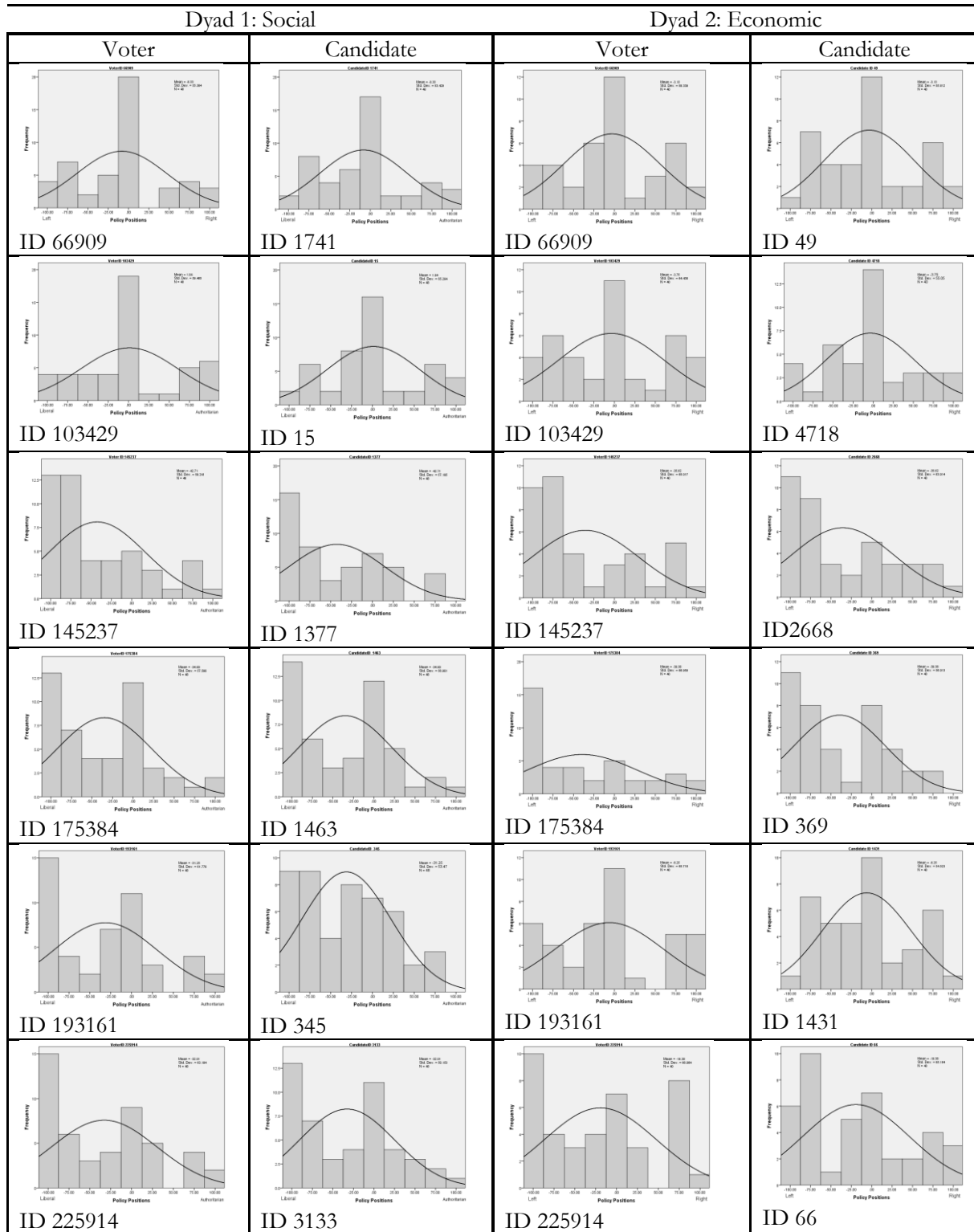
Extraction Method: Principal Component Analysis.

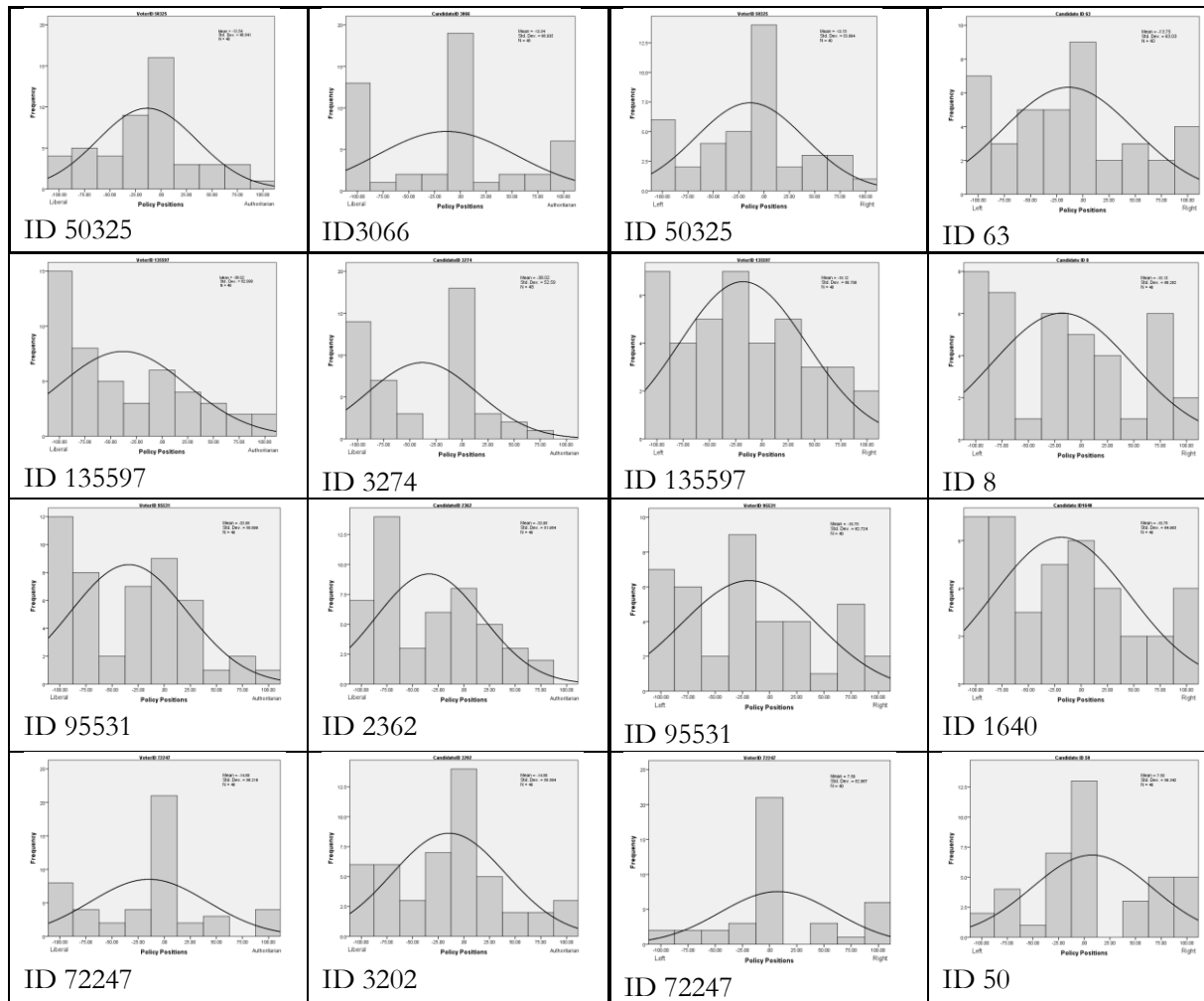
Rotation Method: Oblimin with Kaiser Normalization.

a. Rotation converged in 28 iterations.

## 8.3 HYPOTHESIS 2

### 8.3.1 Sample Preference Distributions: Voter-Candidate Dyad Comparison





## 8.4 HYPOTHESIS 3

### 8.4.1 Component Correlation Matrix

Component Correlation Matrix

Component	1	2	3	4	5
1	1.000	.134	-.365	-.075	-.236
2	.134	1.000	-.237	-.065	.018
3	-.365	-.237	1.000	.045	.099
4	-.075	-.065	.045	1.000	.025
5	-.236	.018	.099	.025	1.000

Extraction Method: Principal Component Analysis.

Rotation Method: Oblimin with Kaiser Normalization.



## 8.4.2 Pattern Matrix

Pattern Matrix <sup>a</sup>					
	Component				
	1	2	3	4	5
Eine Volksinitiative möchte die Zuwanderung regulieren und das migrationsbedingte Bevölkerungswachstum auf 0.2% pro Jahr beschränken. Unterstützen Sie diese Initiative?	*-.805	.137	-.156	.042	.038
Befürworten Sie das bestehende Personenfreizügigkeitsabkommen mit der EU?	*.772	-.182	.106	.077	-.104
Soll der Zugang zur erleichterten Einbürgerung durch den Bund erschwert werden?	*-.709	.030	-.052	.094	.075
Sollen Volksinitiativen für ungültig erklärt werden, wenn sie gegen die Europäische Menschenrechtskonvention (EMRK) verstossen?	.639	.027	-.135	.168	-.072
Die Schweiz verfolgt seit einigen Jahren eine aktivere, öffentlichere Aussenpolitik, die sich weniger an der strikten Neutralität orientiert. Begrüssen Sie dies?	*.598	-.090	-.160	.218	-.108
Soll die Schweiz vermehrt Flüchtlingsgruppen aufnehmen, für die das UN-Flüchtlingshilfswerk (UNHCR) Aufnahmeland sucht (sog. Kontingentsflüchtlinge)?	*.584	.062	-.165	-.147	-.010
Entwicklungshilfe	*.560	.232	-.184	-.046	.084
Soll das Jugendstrafrecht in Zukunft mehr Gewicht auf das Verbüssen längerer Haftstrafen in geschlossenen Anstalten als auf Resozialisierungsmassnahmen legen?	*-.559	-.033	.066	.238	-.035
Würden Sie es befürworten, wenn für Ausländer/innen, die seit mindestens zehn Jahren in der Schweiz leben, gesamtschweizerisch das Stimm- und Wahlrecht auf Gemeindeebene eingeführt würde?	*.551	.180	-.011	-.128	-.194
Soll sich der Staat finanziell stärker für die Integration von Ausländer/innen engagieren?	*.541	.201	-.101	-.060	-.037
Eine Volksinitiative verlangt, dass der Bundesrat direkt vom Volk gewählt werden soll. Befürworten Sie dieses Anliegen?	*-.504	.212	.062	-.067	-.193
Sind Sie dafür, dass der Status von Sans-Papiers durch eine einmalige kollektive Erteilung von Aufenthaltsbewilligungen legalisiert wird?	*.482	.190	-.132	-.161	-.135
Die Schweizer Armee kann heute zum Selbstschutz bewaffnet bei friedenserhaltenden Einsätzen unter UNO- oder OSZE-Mandat im Ausland eingesetzt werden. Befürworten Sie dies?	*.458	-.237	.002	.316	.053
Finden Sie es grundsätzlich richtig, dass der Staat die Fremdbetreuung von Kindern finanziell unterstützt (mit Steuerabzügen oder Subventionen)?	*.423	.151	-.036	.009	-.238
Kulturförderung	*.393	.322	-.020	-.173	-.113
Soll die Schweiz innerhalb der nächsten vier Jahre EU-Beitrittsverhandlungen aufnehmen?	.361	.114	-.095	-.022	-.217
Soll die Einhaltung der Menschenrechte bei wirtschaftlichen Abkommen mit anderen Ländern (z.B. Freihandelsabkommen) stärker berücksichtigt werden?	.333	.200	-.318	.104	.033

In den letzten Jahren wurden die Regeln zum Erwerb und Besitz von Waffen verschärft. Begrüssen Sie diese Entwicklung?	.315	.002	-.297	.165	-.063
Finden Sie es richtig, wenn Schulen Dispense aus religiösen Gründen für einzelne Fächer oder Veranstaltungen bewilligen (z.B. Turn-/Schwimmunterricht, Schullager oder Sexualkundeunterricht)?	.307	.165	.140	-.176	.136
Gemäss dem Konzept der integrativen Schule werden Kinder mit Lernschwierigkeiten oder Behinderungen grundsätzlich in regulären Schulklassen unterrichtet. Befürworten Sie dies?	.290	.150	-.010	-.017	-.048
Soll die Post verpflichtet werden, ein flächendeckendes Poststellennetz aufrechtzuerhalten?	-.053	*.559	-.080	.072	.111
Würden Sie eine nationale Spitalplanung befürworten, die auch zur Schliessung von Spitälern führen kann?	.057	*.540	-.283	.151	-.137
Landwirtschaft	-.065	*.536	.064	.003	*.301
Befürworten Sie die Einführung eines für alle Arbeitnehmenden gültigen Mindestlohnes von 3'800 CHF (für eine 100%-Stelle / 40h-Woche)?	.063	*.497	-.333	.116	-.082
Sozialversicherungen und Sozialpolitik	.325	*.490	-.129	.027	-.073
Soll in der Schweiz anstelle des freien Milchmarktes wieder eine zentrale Mengensteuerung der Milchproduktion eingeführt werden?	-.146	*.481	-.094	-.019	.134
Sollen Personen, die sich keinem Ärztenetzwerk (Managed Care) anschliessen wollen und nach wie vor die freie Arztwahl vorziehen, einen höheren Selbstbehalt bezahlen?	.035	*.476	-.295	.126	.039
Sollen die staatlichen Unterstützungsleistungen für Familien mit tiefem Einkommen ausgebaut werden?	.316	*.474	-.117	.054	.043
Befürworten Sie eine Erhöhung des Rentenalters für Frauen und Männer (z.B. auf 67 Jahre)?	.159	*.469	.167	-.095	.037
Sollen sich Bahnfahrer/innen in Zukunft durch höhere Billettpreise stärker an den Kosten des Ausbaus und Unterhalts des Schienennetzes beteiligen?	-.054	*.468	.005	.076	.041
Die Invalidenversicherung spricht bei nicht objektiv nachweisbaren Schmerzstörungen (z.B. als Folge eines Schleudertraumas) keine IV-Renten mehr zu. Finden Sie dies richtig?	-.251	*.441	.077	.054	.026
Finden Sie es richtig, dass einzelne ärztliche Leistungen der Komplementärmedizin (Alternativmedizin) wieder von der Grundversicherung vergütet werden?	.058	*.402	-.126	.187	-.082
Würden Sie die Einführung einer Frauenquote in Verwaltungsräten börsenkotierter Unternehmen befürworten?	.097	.370	-.225	-.068	-.170
Soll zusätzlich zur bestehenden Mutterschaftsversicherung ein 24-wöchiger Elternurlaub (	.251	.365	-.161	-.103	-.145
Sollen Unternehmen mit mehr als 250 Beschäftigten verpflichtet werden, behinderten Personen Arbeitsplätze anzubieten?	.108	.351	-.316	.153	.012
Würden Sie bei der Arbeitslosenversicherung die Einführung degressiver Taggelder begrüssen (d.h. die Höhe der Taggelder nimmt mit zunehmender Bezugsdauer ab)?	-.272	-.323	.064	.103	.002
Finanzausgleich / Abbau kantonalen Unterschiede	.103	.189	-.116	.129	.057

Eine Volksinitiative fordert, dass die Gesamtfläche der Bauzonen in der Schweiz für die nächsten 20 Jahre auf dem heutigen Stand begrenzt wird. Befürworten Sie dieses Anliegen?	-.190	.000	*-.621	-.171	.062
Soll die Möglichkeit der Pauschalbesteuerung von ausländischen Bürger/innen in allen Kantonen abgeschafft werden?	-.006	.104	*-.592	.034	-.076
Sollen stark befahrene Autobahnabschnitte (z.B. Bern-Zürich oder Lausanne-Genf) ausgebaut werden?	-.102	.050	*.565	*.356	-.125
Würden Sie es begrüßen, wenn der Steuerwettbewerb zwischen den Kantonen grundsätzlich stärker beschränkt würde?	.031	.282	*-.537	.183	-.086
Strassenverkehr (Bau und Unterhalt)	-.111	.095	*.526	*.357	-.129
Befürworten Sie die Einführung einer CO2-Abgabe auf Treibstoffe, wenn die Schweiz die eigenen Klimaschutzziele nicht erreicht?	.321	-.073	*-.518	-.053	.065
Der Bundesrat möchte bis spätestens 2034 aus der Atomenergie aussteigen (d.h. die bestehenden Atomkraftwerke werden stillgelegt und keine neuen mehr gebaut). Unterstützen Sie dieses Vorhaben?	.185	.135	*-.509	.101	-.010
Würden Sie es befürworten, wenn ab der Eröffnung der NEAT (2017) der Gotthard-Strassentunnel für den alpenquerenden Lastwagenverkehr gesperrt werden würde?	-.120	.081	*-.508	-.055	-.051
Eine Volksinitiative will festlegen, dass innerhalb eines Unternehmens der höchste Lohn maximal dem Zwölfwachen des kleinsten Lohnes entsprechen darf (1:12-Initiative). Unterstützen Sie dieses Anliegen?	-.077	.433	*-.475	.041	-.032
Der Bundesrat will für Grossbanken verschärfte Regulierungen einführen, die über die international üblichen Vorschriften hinausgehen (sogenannte Umweltschutz und Raumordnung	.057	-.034	*-.469	.164	.020
Eine Volksinitiative will für die Grundversicherung eine öffentliche Einheitskrankenkasse einführen. Unterstützen Sie dieses Anliegen?	.095	.165	*-.466	-.118	-.049
Heute werden 1% aller Direktzahlungen zur Förderung der Bio-Produktion aufgewendet. Sollte dieser Anteil im Rahmen der Agrarpolitik 2014-2017 zulasten der konventionellen Landwirtschaftsbetriebe erhöht werden?	-.022	.248	*-.452	.127	-.167
Würden Sie die Einführung des automatischen Austausches von Bankkundendaten zwischen der Schweiz und ausländischen Steuerbehörden befürworten?	.133	.010	*-.451	-.051	-.099
Soll das geltende Moratorium für gentechnisch veränderte Pflanzen und Tiere in der Schweizer Landwirtschaft über 2013 hinaus verlängert werden?	.198	.136	*-.447	.050	-.054
Sollte die Finanzierung von Parteien sowie von Wahl- und Abstimmungskampagnen vollständig offengelegt werden müssen?	-.035	.239	*-.429	.038	.253
Haben für Sie Senkungen der Bundessteuern in den nächsten vier Jahren Priorität?	.287	.057	*-.398	.150	-.128
Befürworten Sie eine Lockerung der Schutzbestimmungen für Grossraubtiere (Luchs, Wolf, Bär)?	-.276	.098	.390	-.002	-.163
Öffentlicher Verkehr	-.066	.082	.273	.182	.107
Sollen die Befugnisse der Sicherheitsbehörden zur präventiven Überwachung des Post-, Telefon- und E-Mail-Verkehrs ausgeweitet werden?	.190	.219	-.223	-.028	-.073
	-.146	-.042	-.056	.476	.151

Sollen für den Bau und den Ausbau von Wind-, Solar- und Wasserkraftwerken die Vorschriften des Umwelt- und Landschaftsschutzes gelockert werden?	.011	.024	.060	.414	-.164
Öffentliche Sicherheit	-.286	.040	.051	*.392	.058
Befürworten Sie die Harmonisierung von Lehrplänen zwischen den Kantonen (z.B. durch die Projekte Lehrplan 21 oder PER)?	.175	-.092	-.221	*.366	-.226
Soll der Erwerb von selbst bewohntem Wohneigentum durch Steuerabzüge für das Bausparen zusätzlich gefördert werden?	-.037	.310	.322	*.364	-.063
Sollte der wirtschaftliche Nutzen von Forschungsprojekten bei der Vergabe von Fördergeldern des Bundes stärker berücksichtigt werden?	-.259	-.049	.177	*.340	.008
Finden Sie es richtig, dass die Armee polizeiliche Aufgaben im Innern wahrnimmt (z.B. bei der Bewachung von Botschaften und Konsulaten, beim Grenzschutz oder bei Grossanlässen wie dem WEF)?	.012	.088	.240	*.331	.205
Eine Volksinitiative möchte die Heiratsstrafe abschaffen. Ehepaare sollen als Wirtschaftsgemeinschaft betrachtet werden und ihr Einkommen gemeinsam versteuern. Unterstützen Sie dies?	.074	-.043	-.036	.266	.163
Würden Sie es befürworten, wenn in der Schweiz die direkte aktive Sterbehilfe durch einen Arzt straffrei möglich wäre?	-.157	-.014	-.074	.071	*-.645
Der Schwangerschaftsabbruch ist in der Schweiz in den ersten zwölf Wochen der Schwangerschaft straflos möglich. Finden Sie das richtig?	-.019	-.052	-.012	.091	*-.613
Die Schweiz kennt relativ strenge Regelungen bei der Fortpflanzungsmedizin. Sollten diese gelockert werden?	.022	-.018	.307	-.050	*-.508
Sollen gleichgeschlechtliche Paare, die in eingetragener Partnerschaft leben, Kinder adoptieren dürfen?	.135	.138	-.049	-.166	*-.497
Sind Sie für eine vollständige Liberalisierung der Ladenöffnungszeiten (Geschäfte können die Öffnungszeiten nach freiem Ermessen festlegen)?	-.069	-.246	.281	.087	*-.490
Soll der Konsum von weichen und harten Drogen sowie deren Besitz für den Eigengebrauch legalisiert werden?	.106	-.066	-.134	-.251	*-.456
Soll die Schweiz ein Agrarfreihandelsabkommen mit der EU abschliessen?	.306	-.286	.114	.206	*-.348
Der Bundesrat schlägt vor, den Bestand der Armee von heute 190'000 auf 80'000 Mann zu reduzieren. Unterstützen Sie diesen Vorschlag?	.287	-.048	-.279	.013	-.340
Landesverteidigung	-.268	-.016	*.332	.092	.335
Sollen Schweizer Jugendliche frei zwischen einem Militär- oder einem zivilen Ersatzdienst wählen können?	.270	.063	-.241	-.041	-.312
Bildung und Forschung	.206	.047	-.020	-.073	-.230

Extraction Method: Principal Component Analysis.

Rotation Method: Oblimin with Kaiser Normalization.

a. Rotation converged in 25 iterations.