

Improving policy representation of the German Bundestag by an alternative election method. Part I: Analysis

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Abstract

Since voters are often swayed more by the charisma, personal image and communication skills of the individual candidates standing for election than by the parties' political manifestos, they may cast votes that are actually in opposition to their policy preferences. Such a type of behavior, known as 'irrational voting', results in the election of representatives who do not correspond exactly to the voters' own views. This is illustrated in Part I of this paper, 'Analysis', using the example of 2013 German Bundestag (federal parliament). We consider the 28 parties that took part in the 2013 Bundestag election and compare their positions on 36 topical issues with the results of public opinion polls. Then we construct the party and coalition indices of popularity (the average percentage of the population represented) and universality (frequency in representing a majority). In particular, we find that the 2013 election winner, the conservative union CDU/CSU with their 41.5% of the votes, was the least representative among the 28 parties considered. The representativeness of the Bundestag is about 50%, as if the correspondence with the electorate's preference on every policy issue had been decided by tossing a coin, meaning that the Bundestag's policy profile is independent of that of the electorate.

In the second part of the paper, 'Proposal', an alternative election method will be introduced and discussed. It will also be hypothetically applied to the 2013 Bundestag, producing a considerable gain in its representativeness.

Keywords: Policy representation, representative democracy, direct democracy, elections, coalitions.

JEL Classification: D71

1 Introduction: policy representation and irrational voting

Policy representation — that is, how well the electorate's policy preferences are represented by the party system and the government — has been studied for half a century; for instance, see [Miller and Stokes 1963, Pitkin 1967, Monroe 1979, Bartels 1991, Hartley and Russett 1992, Stimson et al 1995, Wlezien 1995, Wlezien 1996, Monroe 1998, Miller et al 1999, Sharpe 1999, Smith 1999, Powell 2000, Budge et al 2001, Soroka 2003, Wlezien 2004, Klingemann et al 2006, Cerami 2007, Budge and McDonald 2007, Soroka and Wlezien 2010, Volkens et al 2013]. To monitor policy representation in modern democracies, a special database has been created within the prize-winning *Manifesto* project (Berlin), aimed at 'quantitative content analysis of parties' election programs from more than 50 countries covering all free, democratic elections since 1945' [WZB 2014].

An alternative approach — how individual voters match with parties — is implemented in a number of so-called voting advice applications (VAAs). Following the Dutch *StemWijzer* (*Vote match*) launched on the internet in 1998, several European countries created sites to help electors compare their policy preferences with party manifestos. They include *Wahlkabine* (*Voting booth*) in Austria, *Glasovoditel* (*Vote guide*) in Bulgaria, *Kohovolit* (*Whom to vote for*) in Czech Republic, *Wahl-O-Mat* (*Election automate*) in Germany, *Vote Match* in the UK, *Te kitvalasztanal?* (*Whom would you choose?*) in Hungary, *Vote Match* in Ireland, *Cabine Eletorale* (*Voting booth*) in Italy, *Providus* (*The farsighted*) in Latvia, *Latarnik Wyborczy* (*Election lantern*) in Poland, *Testeaza-ti votul!* (*Test your vote!*) in Romania, *Kohovolit* (*Whom to vote for*) in Slovakia, *Elecciones.es* (*Elections.es*) in Spain and *Smartvote* Switzerland [Vote match Europe 2014, Garzia and Marschall 2014]. In 2006, the Free University of Amsterdam developed a general *Election compass* whose applications range from the university’s works council to the US president and the European Parliament [Kieskompas 2006, EU profiler 2009]. This device not only evaluates the preference proximity between voters and candidates but also locates them on a two-dimensional landscape with five-point ‘Left–Right’ and ‘Conservative–Progressive’ axes.

Most studies in policy representation consider one-dimensional models, locating the policy preferences of parties, governments and voters either on more-or-less policy axes (in terms of budgeting for defence, education, health, etc.) or on the aggregated left-right ideological axis. However, the modern electorate, parties and governments locate themselves with respect to numerous policy issues, making policy preferences essentially multi-dimensional and hardly reducible to left–right alignment:

... in a number of Western societies ... no socioeconomic or cultural cleavage is evidently more important and stable than others. To be sure, citizens do not constitute a homogeneous mass that can be divided in any manner by the choices they are offered, but the social and cultural lines of cleavage are numerous, crosscutting, and rapidly changing. ... The number of floating voters who do not cast their ballot on the basis of stable party identification is increasing. A growing segment of the electorate tends to vote according to the stakes and issues of each election.

[Manin 1997, *Principles of Representative Government*, pp. 223, 231]

Following the current trends, we attempt to measure policy representation with respect to multiple policy issues and suggest an election procedure that would enhance it. The first part of the paper, ‘Analysis’, is devoted to revealing actual policy preferences of the German electorate and evaluating the current representativeness of the political parties, the Bundestag, and its coalitions. For this purpose, we apply the framework from [Tangian 2013a], extending it to the 2013 Bundestag election and 28 parties instead of five, which makes our analysis more comprehensive and allows us to study the case with statistical tools. We compare the positions of the parties, the Bundestag and the coalitions on a number of policy issues with the outcomes of public opinion polls on the same issues and construct indices of popularity (the average percentage of the population represented) and universality (frequency in representing a majority). The results are discouraging. The 2013 election winner, the union of the two conservative parties CDU/CSU with their 41.6% of the votes, is the least representative among the 28 parties considered. Of the other three parties eligible for Bundestag seats (with $\geq 5\%$ of the votes), only the left party, DIE LINKE,¹ attains the upper-middle ranking, whereas the social democrats, the SPD, and the ecologists, GRÜNE, are located in the low-middle domain. As a result the policy representativeness of the 2013 Bundestag is about 50%, the same as if its position on every issue had been decided by tossing a coin. The coalition formation aggravates the situation further.

¹The capitalization of the party names follows the way the parties themselves do it.

This ‘election failure’ can be explained by the known phenomenon of irrational behavior on the part of the voters [Caplan 2006, Bartels 2008, Bartels 2010], who often act inconsistently with their own policy preferences, disregard party manifestos and cling to political family traditions, even if outdated. A possible explanation is the shift in the German (and world) political spectrum to the right after the collapse of communism and the 1990 German reunification, while voters continue to believe that the parties represent the same values as a few decades ago. Finally, it is possible that policy representation is not the primary concern of the electorate.

The contradiction with the rational voter model is sometimes interpreted as *rational ignorance* (delving deeply into the matter for an optimal choice is too costly and makes little sense, especially because of the negligible role of one vote [Downs 1957, pp. 244–46, 266–71]), or as *expressive voting* (since a single vote is not decisive, one can vote altruistically ‘for its own sake rather than to bring about particular consequences’ [Brennan and Lomasky 1993, p. 25]). Besides, voters are often influenced by *a priori* judgments about the candidates’ platforms or pay more attention to the candidates’ personal images than to their actual political profiles and real merits [Adams et al 2011, Manin 1997, pp. 219–221]. The seemingly arbitrary behavior of voters is also explained by the existence of issues beyond the political agenda, including ideological, religious, ethnic, traditional, cultural and intellectual reasons [Roemer 1998, Groseclose 2001]. Some authors even suppose that electors can intentionally vote ‘strategically’ for non-favorite candidates [Alesina and Rosenthal 1995, Kedar 2009]. For instance, one who prefers a moderate policy can vote for the left party to shift the conservative status quo toward the left. This practice of *compensatory voting* resembles bargaining when the opposing sides initially declare extreme starting points in order to end up somewhere in the middle.

Another explanation for inconsequent voter behavior can be given with a reference to the notion of *retrospective voting* [Bartels 2010, Caplan 2006, p. 107]. This means that if citizens are satisfied with the current policy then the government is reelected; a disappointed population usually votes for the opposition. Indeed, the 2013 reelection of the CDU/CSU took place against the background of good German performance during the economic crisis, especially compared with other European countries. Together with the country’s reunification under the governance of the same CDU/CSU, the economic success contributed to Germany’s international influence and completely restored the political standing ruined by World War II, which was highly appreciated by the population.² On the other hand, during the SPD administration from 1998–2005, the Hartz labor market reforms fell heavily on the shoulders of weak social groups [Hartz concept 2013]. This withdrawal from the traditional solidarity position is the major reason why, from 2002–2011, the SPD lost 29% of its members [SPD statistics 2013]. Having been founded in 1863 as the *Allgemeiner Deutscher Arbeiterverein* (the General German Workers’ Association), the SPD had lost much of its popular nature, and a 2013 public opinion poll revealed that 59% of Germans considered it no longer representative of workers’ interests [Infratest dimap 2013]. Thus, the 2013 electoral success of the CDU/CSU is also due to the weakening of its main competitor.

Most authors, recognizing the gap between voters’ preferences and political reality, nevertheless defend the viewpoint that, in a representative democracy, political institutions are well controlled by the public. It is argued that the electorate is not as superficial as it may seem

²It is however questionable whether Germany’s recent achievements are due to CDU/CSU governance. Unlike some other industrialized countries, which turned to services and computer technologies, Germany did not abandon its top-quality manufacturing niche in the world economy and continued to export its products to countries like China which were relatively unaffected by the crisis and had long-running development programs for their huge internal markets. Thus, Germany’s good performance during the crisis is rather explained by its traditional adherence to heavy industries whose products remain in high demand by emerging economies. Neither should the reunification of Germany be attributed exclusively to the CDU/CSU; the decisive role has played the USSR headed by Mikhail Gorbachev.

[King 2002, Kedar 2009, Soroka and Wlezién 2010], furthermore regular elections with variable results provide adequate electoral feedback about the policies pursued [Page and Shapiro 1992, Stimson et al 1995, Manin 1997, Powell 2000, Erikson et al 2002, McDonald and Budge 2005, Kedar 2009]. Policymakers are however more concerned than scholars, characterizing the same situation as a *democratic deficit*, which is currently being discussed at all political levels, including the European Union and the United Nations [European Union 2014, UN Parliamentary Assembly 2008]; for a survey see [Mair and Thomassen 2010]. Only recently have scholars started to realize the real problem:

We find no substantively or statistically significant evidence that voters adjust their perceptions of parties' Left-Right positions in response to the policy statements in parties' election manifestos — a conclusion that is striking given that interviews with European political elites that we conducted (discussed below) suggest that parties campaign on the basis of these manifestos . . . By contrast, we find that European citizens do react to their perceptions of parties' Left-Right positions, i.e., citizens adjust their Left-Right positions and their partisan loyalties in response to the parties' policy images . . . But, because voter perceptions do not track the parties' actual policy statements, there is a disconnect between shifts in elite policy discourse and voter reactions. Voters react to what they perceive the parties stand for, but these perceptions do not match up with the actual statements in the parties' policy manifestos, which form the basis for the parties' election campaigns.

[Adams et al 2011, Is anybody listening? Evidence that voters do not respond to European parties' policy statements during elections, *Am J Polit Sci*: 55, p. 371]

The voters' superficiality and inattention to party manifestos would be not so dramatic if it did not lead to discrepancies between the electorate and the government. For instance, the German population responded with unprecedented violence to quite ordinary and rational decisions, like constructing a new railway station in Stuttgart to replace its terminus with modern through-tracks for high-speed trains [Alle-gegen-S21.de 2014], or transporting and disposing nuclear waste [Castor-Transport geht auf schwierigste Etappe 2010]. The mismatch between the electorate and the actual political administration is clearly revealed by our analysis. A serious warning to the currently governing moderate parties is the superior policy representation of 'the increasingly undifferentiated ranks of the nativist right and anti-American far-left' [Kamm 2016, p. 26]. The simultaneousness of their high ranking can be explained by the fact that both extreme left and extreme right parties are populist (though with different backgrounds), they appeal primarily to the same lower classes, and they exhibit similarities in their positions on many policy issues supported by large fractions of the population. Currently they garner only few votes, but if the discrepancy between the citizenry and government increases, people can elect extreme politicians. However, to a large extent election failures go unnoticed, because politicians, when reelected, receive faulty feedback from the population and continue to pursue unpopular policies.

Section 2, 'Representativeness indices of the parties and the Bundestag', describes the data sources and defines the indices of popularity and universality of German parties and the 2013 Bundestag before coalition formation. It is shown that the winning parties are not as representative as one might expect, meaning that voters have not acted consistently with their own policy preferences, and that the Bundestag position is practically unrelated to public opinion.

In Section 3, 'Evaluation of coalitions', the indices mentioned are extended to possible Bundestag coalitions, and some negative effects of coalition formation on the representativeness of the Bundestag are discussed.

In Section 4, ‘Conclusions to Part I’, the main findings of the first part of the paper are recapitulated and placed into context.

The Appendix (Section 5) contains full references to the polls of public opinion used in the study, including exact formulation of the poll questions.

2 Representativeness indices of the parties and the Bundestag

Table 1 shows the 28 German parties that took part in the 2013 federal election, and Table 2 displays the balance of public opinion and party positions on 38 policy issues. We perform our analysis from the standpoint of virtual direct democracy. The positions of the parties are compared with the results of public opinion polls. Then the parties are evaluated with two indices of representativeness — *popularity* and *universality* — based on the size of groups resulting from *crosscutting cleavages* [Miller 1964, Wright 1978, Miller 1983, Brams et al 1998]. Both indices suggest a kind of correlation measure for estimating the proximity between party positions and voters’ opinions [Achen 1977, Achen 1978]. This approach differs from measures of ideological congruence at the one-dimensional left–right axis [Golder and Stramski 2010]. The cleavages considered below are defined in a multi-dimensional policy space whose dimensions are not directly linked to any ideology.

The crosscutting cleavages used in our analysis are determined by dichotomous questions, each dividing the society into two groups: protagonists (Yes-group) and antagonists (No-group); abstentions are not considered. A party, answering these questions, represents the Yes-groups for some questions and the No-groups for others. By definition, the *popularity index* of a party is the average size of the group represented, averaged over all the questions selected. The *universality index* of a party is its frequency in representing a majority. The popularity and universality indices are computed in two versions: for equally weighted questions, meaning their equal importance, and for the questions weighted with the base 2 logarithm of thousand Google hits for the questions’ keywords (the keywords in German — in order to restrict the search to the German area — are the titles to the questions in Appendix) — it is assumed that the number of relevant search results reflects the importance of the question.

The questions and the party positions are from the *Wahl-O-Mat* — the voting advice application of the German Federal Agency for Civic Education [Bundeszentrale für politische Bildung 2014]. The *Wahl-O-Mat* (an invented word composed from the German *Wahl* = election and *Automat*) is the German version of the Dutch Internet site *StemWijzer* (‘VoteMatch’) [Pro demos 2014], which was originally developed in the 1990s to involve young people in political participation. Both websites help the users locate themselves on the political landscape by testing how well their opinions match with party positions. Before an election (local, regional, federal and even European), a special governmental supervising committee compiles a list of questions on topical policy issues (‘Introduce minimum wage?’—Yes/No, ‘Introduce a general speed limit on motorways?’—Yes/No, etc.) and asks the parties participating in the election for their answers. A user of the site answers the same questions, eventually attributing weights to reflect their importance, and then the program compares his or her political profile with that of the parties and finds the best-matching party, the next-best-matching party, etc.

The *Wahl-O-Mat* provides no statistics for individual answers, but even if they were available, they would be biased toward internet users.³ For this reason we refer to the public opinion polls that pertain to 36 of the 38 *Wahl-O-Mat* questions (for two issues, no appropriate polls

³Before the 2013 Bundestag election, the *Wahl-O-Mat* site was visited over 13 million times [Bundeszentrale für politische Bildung 2014].

Table 1: German parties in the 2013 Bundestag election. Source: [Bundeswahlleiter 2014, Bundeszentrale für politische Bildung 2014]

Party logo	Party description	Number of members	Number of votes	Percentage of votes
	Union of Germany's two main conservative parties, Christlich Demokratische Union Deutschlands (Christian Democratic Union of Germany) founded in 1950 and Christlich-Soziale Union in Bayern (Christian Social Union of Bavaria) founded in 1945	635000	18165446	41.545
	Sozial-demokratische Partei Deutschlands (Social Democratic Party) founded in 1863	477000	11252215	25.734
	Die LINKE (The Left) founded in 2007 as the merger of East German communists and the Electoral Alternative for Labour and Social Justice (WASG), a left-wing breakaway from the SPD	64000	3755699	8.589
	BÜNDNIS 90/DIE GRÜNEN (Alliance 90/The Greens) founded in 1993 as the merger of DIE GRÜNEN (West Germany) and BÜNDNIS 90 (East Germany), both with a social-democratic background	60800	3694057	8.448
	Freie Demokratische Partei (Free Democratic Party) founded in 1948, liberal political party close to employers' organizations	60000	2083533	4.765
	Alternative für Deutschland (Alternative for Germany) founded in 2013, a conservative, euro-currency-sceptic party	14000	2056985	4.704
	Piratenpartei Deutschland (Pirate Party of Germany) founded in 2006, part of the international Pirate movement promoting the information society with free access to all digital media	31700	959177	2.194
	National-demokratische Partei Deutschlands (National Democratic Party of Germany) founded in 1964, a far-right German nationalist party	5000	560828	1.283
	FREIE WÄHLER (Free Voters) founded in 2009, a party in opposition to the EU financial policy	6000	423977	0.970
	Mensch Umwelt Tierschutz (Human Environment Animal Welfare) founded in 1993, a party promoting the introduction of animal rights into the German constitution	1000	140366	0.321
	Ökologisch-Demokratische Partei (Ecological Democratic Party) founded in 1982, a conservative environmentalist party	5700	127088	0.291
	Die Republikaner (The Republicans) founded in 1983, a national conservative party opposing to immigration	5800	91193	0.209
	Partei für Arbeit, Rechtsstaat, Tierschutz, Elitförderung und basisdemokratische Initiative (Party for Work, Rule-of-Law, Protection of Animals, Advancement of Elites and Grass-root Democratic Initiative) founded in 2004, a populist parodical party with totalitarian trends	10000	78674	0.180

Table 1: (continued) German parties in the 2013 Bundestag election

Party logo	Party description	Number of members	Number of votes	Percentage of votes
	Bürgerbewegung pro Deutschland (Pro-Germany Citizens' Movement) founded in 2005, a far-right populist party opposing illegal immigration and multi-national corporations and financial institutions	730	73854	0.169
	Bayernpartei (Bavaria Party) founded in 1946, a separatist Bavarian party advocating Bavarian independence within the European Union	500	57395	0.131
	Volksabstimmung (Referendum party) founded in 1997, a party promoting direct democracy of the Swiss type	1000	28654	0.066
	RENTNER Partei Deutschland (German Party of Pensioners) founded in 2002, a party of social welfare state bridging the interests of generations	750	25134	0.057
	Partei der Vernunft (Party of Reason) founded in 2009, a liberal party promoting the ideas of the Austrian School of economic thought — minimal state, free market, decentralization of political power and subsidiarity	1000	24719	0.057
	Marxistisch-Leninistische Partei Deutschlands (Marxist-Leninist Party of Germany) founded in 1982, an anti-revisionist party, referring to Marx, Engels, Lenin, Stalin and Mao Zedong	2300	24219	0.055
	Partei Bibeltreuer Christen (Party of Bible-abiding Christians) founded in 1989, a conservative evangelical party, opposing anti-Semitism, same-sex marriage and abortion	2700	18542	0.042
	Bündnis für Innovation und Gerechtigkeit (Alliance for Innovation and Justice) founded in 2010, a party of Muslims promoting their integration	1000	17743	0.041
	Bürgerrechtsbewegung Solidarität (Civil Rights Movement Solidarity) founded in 1992, a part of the worldwide LaRouche (U.S. politician) Youth movement with republican orientation but promoting worldwide solidarity, e.g. abolishing the debts of the Third World	1200	12814	0.029
	Feministische Partei DIE FRAUEN (The Women), a feminist party founded in 1995 promoting the rights of women	300	12148	0.028
	Partei der Nichtwähler (Party of Non-Voters) founded in 1998, a party with a social democratic background promoting improving representative democracy by introducing elements of direct democracy	400	11349	0.026
	Bündnis 21 / Rentnerinnen- und Rentner-Partei (Alliance 21 / Party of Retirees) founded in 2007, promoting improving the pension, health and education systems	1050	8578	0.020
	Die Violetten — für spirituelle Politik (The Violets — for spiritual Policy) founded in 2001, claiming to represent 'alternative spiritual politics in the new age'	700	8211	0.019
	Familien-Partei Deutschlands (The Family Party of Germany) founded in 1983, a party promoting family values	600	7449	0.017
	Partei für Soziale Gleichheit, Sektion der Vierten Internationale (Party of Social Justice, Section of the Fourth International) founded in 1997, a Trotskyist party	300	4564	0.010

Table 2: Public opinion and party positions on topical policy questions. Sources: [Bundeszentrale für politische Bildung 2014] and others, see Appendix.

Questions	Question weights		Public opinion	
	Un-weighted	Google hits in K	Pro-tagonists %	An-tagonists %
1 Introduce a nationwide minimum wage	1	10.98	86	12
2 Childcare subsidy for parents whose kids do not attend state-sponsored day care	1	9.98	20	77
3 Introduce a general speed limit on highways	1	8.70	53	45
4 Germany should retain the Euro as its currency	1	9.28	69	27
5 Electricity prices should be more heavily regulated by the state	1	9.40	90	10
6 Video surveillance in public spaces should be expanded	1	6.58	81	18
7 Germany should introduce an unconditional basic income	1	9.48	80	20
8 Only organic agriculture should receive financial incentives	1	9.10	76	23
9 All children, regardless of cultural heritage, should receive equal education	1	5.42	33	60
10 The top income tax rate should be increased	1	8.27	75	22
11 Germany should leave NATO	1	6.98	52	36
12 No new construction of coal-fired energy plants	1	7.48	92	8
13 The ‘morning after’ pill must be available by prescription only	1	6.45	68	32
14 All banks in Germany should be nationalized	1	7.34	60	31
15 Germany should accept more refugees	1	8.75	39	56
16 State compensation for the time employees spend caring for incapacitated relatives	1	6.58	?	?
17 Political parties that are unconstitutional should continue to be illegal	1	5.54	73	22
18 The level of federal student financial aid should be independent of the parents’ income	1	11.01	51	21
19 Border control should be re-introduced	1	8.63	48	52
20 Institute a legal quota for women on company governing boards	1	10.25	31	65
21 Financially stronger federal states should less support weaker federal states	1	8.17	9	86
22 The legally mandated retirement age should be lowered again	1	11.77	73	17
23 The government should employ more people with immigrant backgrounds	1	7.77	?	?
24 Exports of munitions should be forbidden	1	7.71	78	20
25 Retain the tax law that favors the spouse who earns much less than the other spouse or nothing	1	8.39	81	16
26 Germany should champion Turkey’s bid for EU membership	1	8.79	27	68
27 Bundestag members should reveal their supplementary incomes to the last Euro	1	5.95	76	20
28 Energy-intensive industries should bear more of the transition to renewable energy costs	1	8.87	81	15
29 Reduce long-term unemployment benefits for those who turn down a job offer	1	7.65	50	50
30 The state should continue to collect tithes on behalf of religious institutions	1	9.81	31	69
31 Require all citizens to enroll in the public health insurance system	1	14.95	83	16
32 Every state in the Euro zone should be liable to pay its own debts	1	10.50	52	38
33 Homosexual couples should be allowed to adopt	1	5.75	63	30
34 No collection of communication data (e.g. telephone, internet) without probable cause	1	9.61	65	30
35 Limit rent price increases, also upon turnover of renters	1	6.75	73	25
36 German citizens should not be allowed to hold additional nationalities	1	7.29	42	53
37 Institute a passenger-car toll on the national highways	1	9.95	22	57
38 Introduce referenda at the federal level	1	8.91	87	11

Table 2: (continued) Public opinion and party positions on topical policy questions

Questions Party positions: 1—Yes; 0—No; ?—Missing data

	CDU/CSU	SPD	DIE LINKE	GRÜNE	FDP	AFD	PIRATEN	NPD	FREIE WÄHLER Tierschutzpartei	ÖDP	REP	Die PARTEI pro Deutschland	BP	Volksabstimmung	RENTNER	Partei der Vernunft	MLPD	PBC	BIG	BüSo	DIE FRAUEN Nichtwähler	Bündnis 21/RRP	DIE VIOLETTEN	FAMILIE	PSG				
1	0	1	1	1	0	0	1	1	0	1	1	0	1	1	0	1	1	1	1	1	1	?	1	1	1	1			
2	1	0	0	0	?	0	0	1	0	0	1	0	?	1	1	0	0	0	1	0	1	0	0	0	1	1	0		
3	0	0	1	1	0	0	?	0	0	1	1	0	0	0	?	0	0	1	0	0	0	1	?	0	1	1	1		
4	1	1	1	1	1	0	1	0	1	1	1	0	1	0	0	1	?	1	1	0	?	1	1	1	1	1	0		
5	0	1	1	?	0	0	?	1	1	1	0	0	1	1	1	1	0	?	1	1	0	1	1	1	1	1	1		
6	1	?	0	0	0	0	0	?	1	0	0	1	0	1	0	1	0	0	1	0	0	?	?	1	0	1	0		
7	0	0	?	?	0	0	1	0	0	1	0	0	1	0	0	0	0	?	0	1	0	?	?	0	1	0	1		
8	0	?	?	?	0	0	1	1	0	1	1	0	1	1	0	1	0	0	0	0	0	1	?	1	1	1	0		
9	1	1	1	1	1	1	1	0	1	1	1	0	1	0	1	?	1	0	1	?	1	1	1	?	1	1	1	1	
10	0	1	1	1	0	0	?	1	0	1	1	0	1	0	0	?	1	0	1	0	1	0	1	0	1	1	1	1	
11	0	0	1	0	0	0	0	1	0	0	0	?	0	1	0	?	0	1	1	0	0	1	1	0	0	?	0	1	
12	0	0	1	1	0	?	1	1	0	1	1	0	?	0	1	?	0	0	1	?	1	0	1	?	1	1	1	?	
13	1	0	0	0	?	1	0	1	1	0	1	1	0	1	1	1	0	0	0	1	1	1	0	?	1	1	1	0	
14	0	0	?	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	1	0	0	0	1	0	0	0	0	1	
15	0	1	1	1	?	0	1	0	0	?	1	0	1	0	0	?	?	0	1	?	1	1	1	?	?	1	1	1	
16	0	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	?	1	1	1	1
17	1	1	1	1	1	1	1	0	1	1	1	1	1	1	0	1	1	0	?	1	1	1	?	1	1	1	1	0	
18	0	?	1	1	1	0	1	1	1	0	1	0	1	1	1	0	0	0	0	1	0	0	1	?	0	1	1	1	
19	0	0	0	0	0	0	0	1	0	0	0	1	0	1	0	0	0	0	0	?	0	0	0	0	?	0	0	0	
20	?	1	1	1	0	0	?	0	0	1	0	0	1	0	0	0	0	?	0	?	?	1	?	0	1	1	0		
21	?	0	0	0	0	1	?	?	?	0	?	1	0	?	1	?	0	1	0	?	0	0	0	?	0	0	1	0	
22	0	1	1	0	?	0	?	1	1	1	0	0	1	1	1	1	1	0	1	0	1	1	?	?	1	1	?	1	
23	1	1	1	1	1	?	1	0	1	1	1	0	1	0	0	?	?	0	1	0	1	1	1	?	?	1	1	1	
24	0	0	1	?	0	0	1	1	0	1	1	?	1	1	?	?	0	0	1	?	0	?	1	1	0	1	1	1	
25	1	?	0	0	1	1	0	1	1	1	1	1	1	1	1	1	1	0	0	1	0	1	0	?	1	0	?	0	
26	0	1	1	1	?	0	?	0	0	0	?	0	0	0	0	1	0	0	0	0	1	0	?	?	?	1	0	0	
27	?	1	1	1	0	1	1	1	0	1	1	1	1	1	1	1	1	0	1	0	1	1	1	1	1	1	1	1	
28	0	?	1	1	0	0	1	1	1	1	1	0	1	1	1	1	1	0	1	1	1	0	1	1	1	1	1	1	
29	1	1	0	0	1	1	0	?	1	?	0	1	0	0	1	0	1	1	0	1	0	0	0	?	1	0	0	0	
30	1	1	0	?	?	1	0	?	1	0	1	0	0	1	1	?	0	0	0	1	1	?	0	?	0	0	0	0	
31	0	1	1	1	0	0	1	1	0	0	1	0	?	1	0	1	1	0	1	0	1	0	1	?	1	0	1	1	
32	1	?	0	0	1	1	0	1	1	1	1	1	?	1	1	1	1	1	0	1	0	1	0	?	1	1	1	0	
33	0	1	1	1	1	0	1	0	?	1	?	0	1	0	0	1	1	1	1	0	0	0	1	1	1	1	?	1	
34	0	0	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	
35	1	1	1	1	0	0	1	1	1	1	1	0	1	0	1	1	1	0	1	0	1	1	1	?	1	1	1	1	
36	1	0	0	0	0	1	0	1	0	1	?	1	0	1	1	?	1	0	0	1	0	?	0	0	0	0	0	0	
37	?	0	0	?	0	?	0	0	0	0	0	1	1	0	1	0	?	0	0	0	0	0	?	?	0	0	0	0	
38	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	

were found) and which were conducted between the two most recent federal elections in 2009 and 2013. A few poll questions are not formulated exactly as in the *Wahl-O-Mat*: No. 11 on Germany’s leaving NATO is ‘simulated’ by the poll question on the end of NATO’s defence service and the necessity of its fundamental reorganization; No. 14 on nationalization of banks, is ‘simulated’ by the poll question on the nationalization of banks *in the case of emergency*; No. 32 on the liability of every Euro-zone state to pay its own debts is ‘simulated’ by a similar poll question that explicitly mentions Spain and Romania; and No. 34 on preventive collection of communication data is ‘simulated’ by the poll question about preventive communication data collection by secret services of the USA and Great Britain. The oldest (2009) polls are: No. 5 on the regulation of electricity prices by the state; No. 9 on separate schools; No. 14 on nationalization of banks; and No. 29 about sanctions against the unemployed who draw benefits but are not actively seeking work. Three polls are internet surveys that are less representative than those conducted by recognized statistical offices: No. 18 on state subsidies for students; No. 19 on restoring the border control; and No. 21 about financial equalization of states. For the exact formulation of the questions in the public opinion polls, their dates and outcomes see the Appendix. Of course, the conclusions based on data with deficiencies require reservations. On the other hand, due to a certain interdependence between responses to different questions, our data collection is somewhat redundant; hence, the conclusions can be expected to be relatively insensitive to data inaccuracies. In any case, our study is aimed rather at exposing a problem than formulating final judgements.

Let us illustrate the construction of representativeness indices with Figure 1. It displays the 38 *Wahl-O-Mat* questions together with their original numbers and color bars indicating the balance of public opinion and the positions of the four Bundestag parties (that received $\geq 5\%$ of the electoral votes); if the data were missing, the corresponding rectangles are missing as well. For a specific example, we take the first question, ‘Introduce a nationwide minimum wage’. The balance of public opinion, with 86% for (protagonists) and 12% against (antagonists) is shown by the blue bar. Its length is normalized, that is, the abstentions have been removed from consideration, and the total bar length is brought up to 100%. The bar’s segments to the left and to the right of the central axis are proportional to the percentage of antagonists and protagonists in the society, respectively. Thus the prevailing public opinion is visualized by the blue bar’s bias from the center.

Every Bundestag faction is depicted by a rectangle in the official party color; its length is proportional to the number of seats it holds in the Bundestag. The ‘No/Yes’ party opinion on the question is reflected by the positioning of the rectangle to the left or to the right of the central axis, respectively. For every question, the given party represents a certain percentage of the population, as revealed by the corresponding public opinion poll. For instance, the union CDU/CSU with its ‘No’ answer to Question 1 represents the opinion of 12% of the population versus the 86% who answered ‘Yes’. After removal of abstentions and normalization (bringing the total to 100%), we obtain the CDU/CSU *representativeness* for Question 1:

$$r_{\text{CDU/CSU},1} = \frac{12}{12 + 86} \approx 0.122 \text{ .}$$

Similarly, with the ‘Yes’ answer to Question 2, ‘Childcare subsidy for parents whose kids do not attend state-sponsored day care’, the union CDU/CSU expresses the opinion of 20% of the population versus 77%. After removal of abstentions and normalization we obtain the following CDU/CSU representativeness for Question 2:

$$r_{\text{CDU/CSU},2} = \frac{20}{20 + 77} \approx 0.206 \text{ ,}$$

and so on. Taking the average representativeness of the CDU/CSU over the 32 questions for

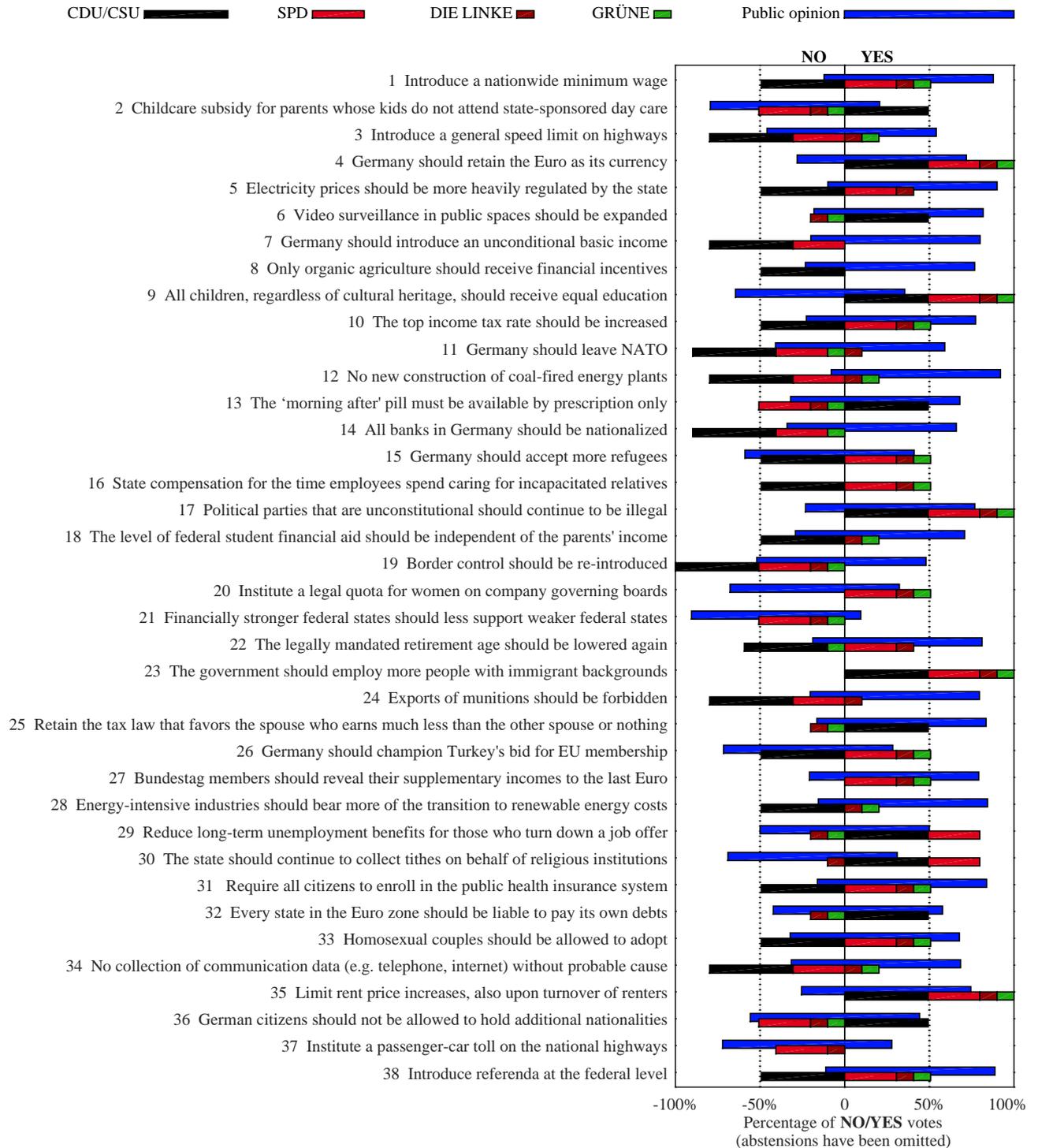


Figure 1: Public opinion and representation thereof by the 2013 Bundestag

which we have both opinion poll data and definitive party answers, we obtain the party’s unweighted *popularity* index

$$P_{\text{CDU/CSU}} = \sum_{q=1}^{32} \frac{r_{\text{CDU/CSU},q}}{32} = \frac{0.122}{32} + \frac{0.206}{32} + \dots \approx 0.40 \quad (\times 100\% \approx 40\%) .$$

Replacing the weights $\frac{1}{32}$ in the above formula with the normalized Google-weights (that is, proportionally reduced to the total = 1), we obtain the Google-weighted version of popularity. It should be noted that for each party we consider only the questions backed up with public opinion polls and definitive party answers, so the normalization of weights varies from one party to another.

The CDU/CSU (unweighted) universality index is the percentage of the questions for which the CDU/CSU represent a non-strict majority ($\geq 50\%$). Again, we restrict ourselves to the 32 questions with known CDU/CSU positions and backed up by public opinion polls. Since the CDU/CSU represent a non-strict majority on 11 out of 32 questions,

$$U_{\text{CDU/CSU}} = \sum_{q:r_{\text{CDU/CSU},q} \geq 0.5} \frac{1}{32} = \sum_{q=1}^{32} \frac{\text{round}[r_{\text{CDU/CSU},q}]}{32} = \frac{11}{32} \quad (\times 100\% \approx 34\%) .$$

If the questions are counted with Google-weights instead of $1/32$, we obtain the Google-weighted version of the universality index.

The indices of other parties are computed in the same way, being based on the party positions in Table 2. The indices of the Bundestag before coalition formation are based on the Bundestag majority opinions on the issues. For instance, the Bundestag’s position on Question 1 is the one of the majority of three YES-factions, of SPD, DIE LINKE and GRÜNE, as visualized by the cumulative length of the party bars in Figure 1 that surpasses the 50%-threshold shown by dotted lines.

Figure 2 displays the indices of popularity P and universality U for 28 German parties and the Bundestag, each in two versions: for unweighted questions (marked with ‘u’) and Google-weighted questions (marked with ‘g’). The parties are sorted in decreasing order of the mean of the four indices. The mean index makes sense, because the popularity and universality indices are correlated, being defined as expected representativeness and expected rounded representativeness, respectively. Table 3 shows that all the rank correlations between the representativeness indices are very close to 1.00.

In particular, the correlation of 0.99 between the unweighted and the Google-weighted indices means that the party ranks are not very sensitive to the question weighting. This can be explained as follows. The responses of a party are backed up by the party’s ideology, which predetermines most of the party answers. The same applies to the electorate groups. With reservations, a party represents more or less the same electorate group on most of the questions. One can even add or remove some questions without greatly affecting the indices. All of these make the role of question weighting in party indexing rather small — which is exactly what we observe. Due to the high correlation of the indices we can characterize the parties by their mean index, as in Figure 2, or by the most ‘impartial’, unweighted index.

Table 3 also shows that the correlation between the parties’ indices of representativeness and the votes received is negative, though not statistically highly significant. This means that the electorate pays little attention to policy representation, often voting contrary to its own policy preferences. The election winner, the union CDU/CSU, has the lowest policy representation rank (28 out of 28) but received the most votes, 41.5%. Moreover, the 34–40% range of its

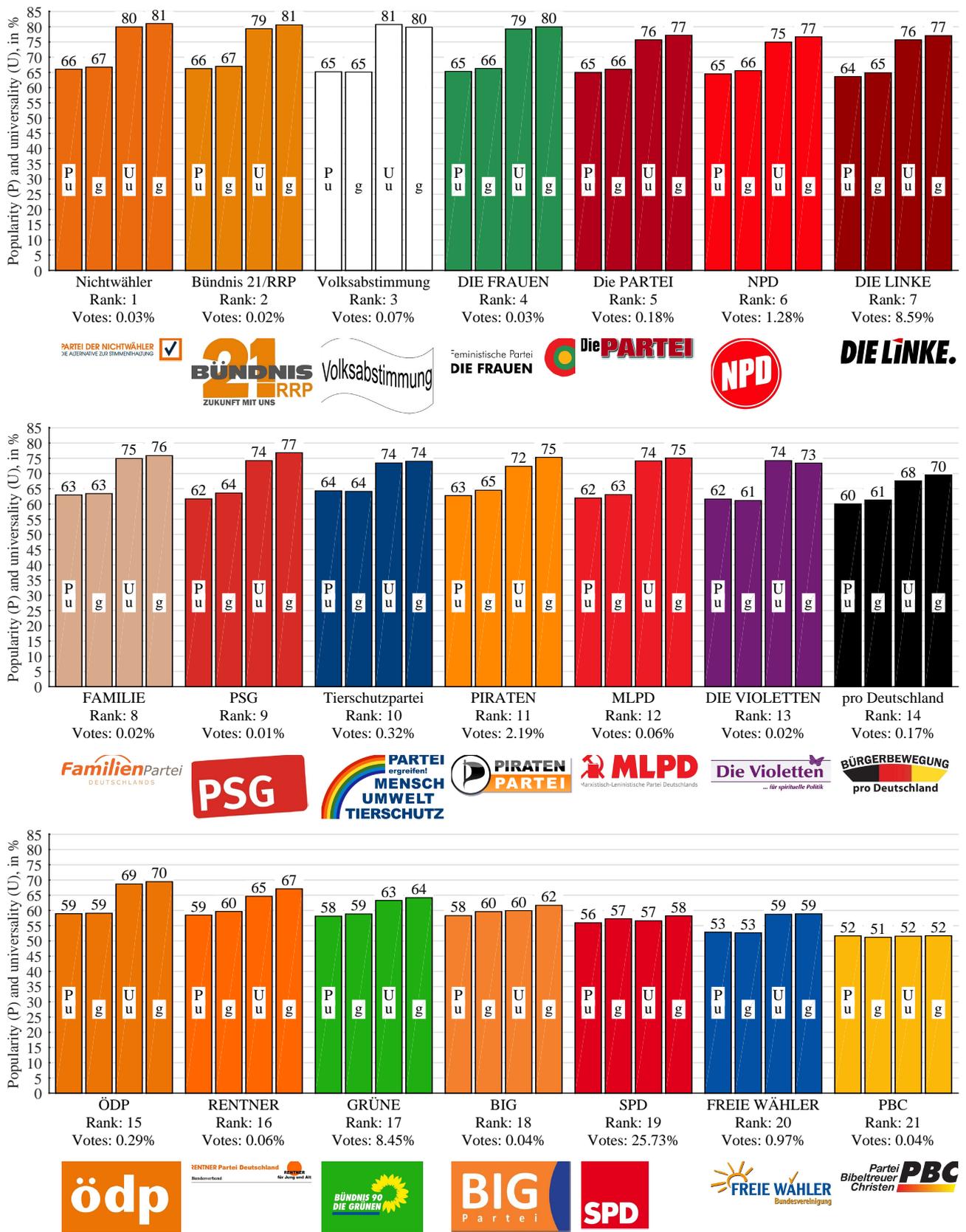


Figure 2: Sheet A. Indices of German parties and the Bundestag: P—popularity, U—universality, u—for unweighted questions, and g—for questions weighted by the number of Google hits

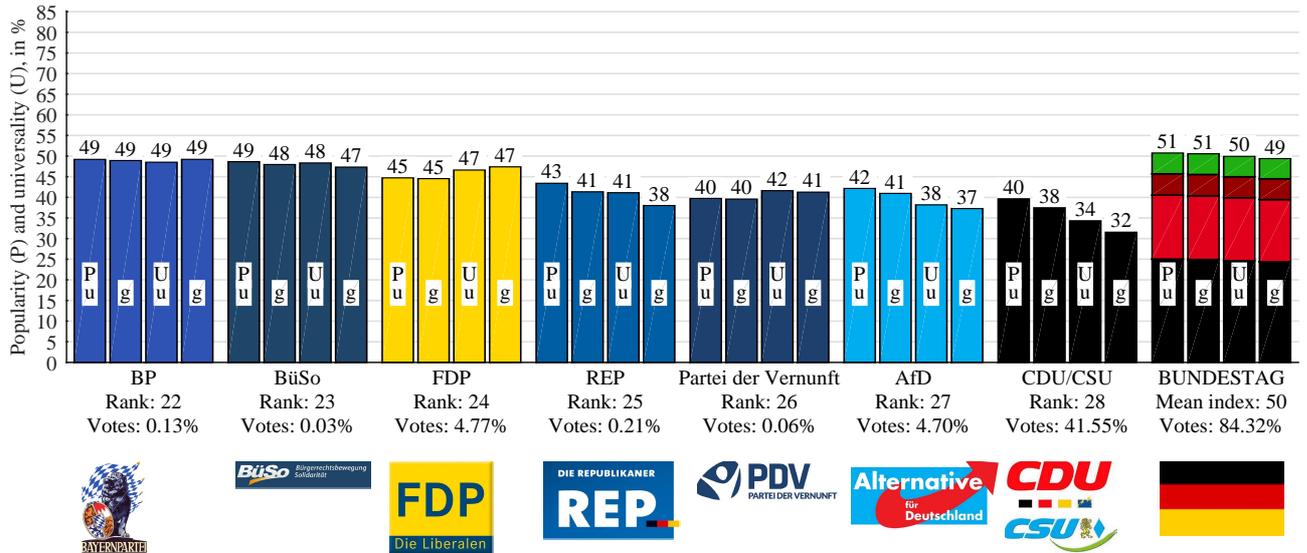


Figure 2: (continued) Indices of German parties and the Bundestag: P—popularity, U—universality, u—for unweighted questions, and g—for questions weighted by the number of Google hits

Table 3: Pearson rank correlation between parties’ votes and their indices of representativeness

	Votes	P unweighted	P Google-weighted	U unweighted	U Google-weighted	Mean index
Votes	1.00	-0.36*	-0.34*	-0.41**	-0.40**	-0.38**
P unweighted	-0.36*	1.00	0.99***	0.98***	0.98***	0.99***
P Google-weighted	-0.34*	0.99***	1.00	0.96***	0.98***	0.98***
U unweighted	-0.41**	0.98***	0.96***	1.00	0.99***	0.99***
U Google-weighted	-0.40**	0.98***	0.98***	0.99***	1.00	0.98***
Mean index	-0.38**	0.99***	0.98***	0.99***	0.98***	1.00

*** P-value ≤ 0.01
 ** $0.01 < \text{P-value} \leq 0.05$
 * $0.05 < \text{P-value} \leq 0.10$

indices says that the CDU/CSU is more non-representative than representative. At the same time, the most representative among the parties eligible for Bundestag seats, DIE LINKE, whose indices attain 64–77%, received only 8.6% of the votes; see Figure 2.

The Bundestag’s policy representation is greatly influenced by the low representativeness of the CDU/CSU, making the Bundestag’s indices before coalition formation as low as ca. 50%; see Figure 2. It should be noted that the same index values would be expected if the matching of the Bundestag’s position with the public opinion on every issue had been decided by tossing a coin. All of these mean that the 2013 Bundestag’s policy profile is practically independent of public opinion.

3 Evaluation of coalitions

Table 4, illustrated by Figure 3, characterizes the minimal eligible coalitions, that is, those possible to form by the parties with $\geq 5\%$ of the votes and constituting a Bundestag majority. In real politics, the eligible coalitions are usually *minimal*, i.e., they contain no more parties

Table 4: Indices of minimal eligible coalitions computed for unweighted questions and the impact of member weights on the coalition decisions $p = 0.50$

Coalitions	Bundestag	Unanimity	Popularity	Universality			
	seats			Expectation	Standard deviation	Expectation	Standard deviation
	%/Rank	%/Rank	%/Rank	%/Rank	%/Rank	%/Rank	%/Rank
1 CDU/CSU–SPD	79.8 / 1	66.7 / 2	46.5 / 2	± 2.9 / 3	45.0 / 2	± 5.8 / 3	
2 CDU/CSU–DIE LINKE	59.5 / 2	33.3 / 4	43.0 / 4	± 2.0 / 1	40.1 / 4	± 4.2 / 1	
3 CDU/CSU–GRÜNE	59.3 / 3	45.7 / 3	44.1 / 3	± 2.5 / 2	42.1 / 3	± 4.9 / 2	
4 SPD–DIE LINKE–GRÜNE	50.7 / 4	77.1 / 1	54.4 / 1	± 3.4 / 4	56.8 / 1	± 6.4 / 4	

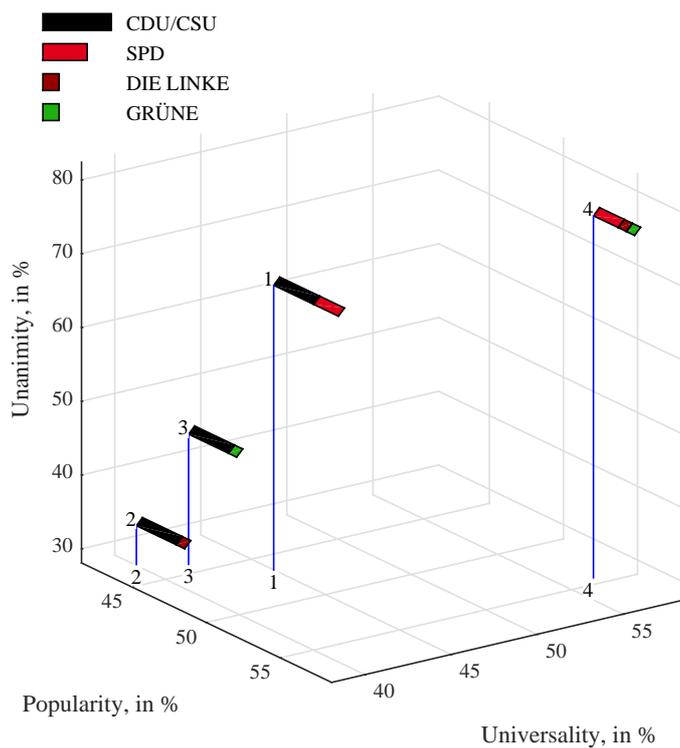


Figure 3: Indices of minimal eligible coalitions computed for unweighted questions and the impact of member weights on the coalition decisions $p = 0.50$. The lengths of the colored bars are proportional to the faction sizes

than necessary, because the more parties, the more complex the negotiations and the less power enjoyed by each faction (cf. with Riker’s minimum winning coalitions [Riker 1962]). For instance, the coalition CDU/CSU–SPD–GRÜNE is eligible but not minimal; that is, the coalition CDU/CSU–SPD, being itself eligible, does not need GRÜNE.

The first column of Table 4 enumerates the minimal eligible coalitions shown in Figure 3 by bars in the official party colors where the length is proportional to the number of votes received by the party. The second column shows the coalition weight in % of parliament seats. The percentage of the parliament seats is proportional to the votes the parties received in the election (small adjustments to the number of parliament seats as prescribed by the German constitution are not taken into account). Therefore, the coalition SPD–DIE LINKE–GRÜNE, with 42.8% of the electors’ votes, has 50.7% of the parliament seats, constituting a Bundestag majority:

$$\begin{aligned} \text{Weight of SPD–LINKE–GRÜNE in the Bundestag} &= \frac{25.7 + 8.6 + 8.5}{41.5 + 25.7 + 8.6 + 8.5} \\ &\approx 0.507 \quad (\times 100\% \approx 50.7\%) . \end{aligned}$$

The third column of Table 4 contains the degree of *unanimity* of the coalition expressed in the total weight of the questions on which all the coalition members agree. In Figure 3, the coalitions’ unanimity corresponds to the heights of the flagstuffs. As shown previously, question weighting plays a secondary role, so we refer to the least partial equal weights of the questions; correspondingly, the coalition indices of popularity and universality are also unweighted; they are X–Y coordinates of the flagstuffs.

If a coalition is unanimous on a certain question then its ‘answer’ is the same as of every member. If coalition members disagree on an issue then the probabilities of the coalition’s Yes/No answer to this question could be assumed proportional to the protagonist-to-antagonist ratio within the coalition. As expressed in a personal conversation with the author by Tobias Lindner, Bundestag member (GRÜNE), the reality is even more uncertain.

To deal with the uncertainty in coalition decision making, we introduce the parameter p — *proportionality of influence to size of the faction* — $0 \leq p \leq 1$, which we explain here with an example. Suppose that, for a certain question, the protagonist-to-antagonist ratio within a coalition is 3:1, that is, the Yes-faction is three times larger than the No-faction. The $p = 1$ denotes the exact proportionality of influence to size, when the coalition answers ‘Yes’ with the probability equal to the weight of the Yes-faction $3/(3 + 1) = 3/4$, and ‘No’ with the probability equal to the weight of the No-faction $1/4$. The $p = 0$ denotes no proportionality of influence to size, that is, the coalition adopts each alternative opinion with equal chances $1/2$. The medium uncertainty $p = 1/2$ means that the influence of faction sizes on the coalition answer is a mix of the two extreme cases in proportion $p = 1/2$ and $1 - p = 1/2$:

$$\begin{aligned} \text{Prob (Yes)} &= \underbrace{p}_{1/2} \times \underbrace{3/4}_{\text{Yes-faction's size influence}} + \underbrace{(1-p)}_{1/2} \times \underbrace{1/2}_{\text{No influence of size}} = 5/8 \\ \text{Prob (No)} &= \underbrace{p}_{1/2} \times \underbrace{1/4}_{\text{No-faction's size influence}} + \underbrace{(1-p)}_{1/2} \times \underbrace{1/2}_{\text{No influence of size}} = 3/8 . \end{aligned}$$

Throughout this paper, the medium uncertainty $p = 1/2$ is assumed and applied to all coalitions considered further.

Under uncertainty, the coalitions’ indices of popularity and universality turn into random variables. Then the *coalition’s popularity* and *universality* are understood as the *expected* size of the

group represented, and as the *expected* frequency in representing a majority, respectively. These indices are no longer exact magnitudes but expected estimates, with their standard deviation regarded as the estimation accuracy. The coalition indices and their standard deviations are computed with formulas from [Tangian 2014, p. 338]. Note that in Table 4, the higher ranks are assigned to greater representation indices, but to smaller standard deviations characterizing their higher accuracy.

A high degree of unanimity facilitates coalition formation, because parties with close positions cooperate more easily. However, the most unanimous and simultaneously most representative minimal eligible coalition, SPD–LINKE–GRÜNE, failed because of tensions between the SPD and DIE LINKE arising from some of DIE LINKE’s politicians who left the SPD in 1997. Among other minimal eligible coalitions (constituted by CDU/CSU with the SPD, DIE LINKE, or GRÜNE) the coalition CDU/CSU–SPD has the highest unanimity and, at the same time, the highest representativeness. This is the coalition that is currently governing.

4 Conclusions to Part I

Inconsistency of election results with the voters’ policy preferences. The negative correlation between the parties’ policy representation indices and the votes received means that German citizens vote rather inconsistently with their policy preferences.

The Bundestag’s disconnection with public opinion. The policy representation indices of the 2013 Bundestag before the coalition formation are all about 50%. This means that the Bundestag’s positions on policy issues are statistically independent of public opinion.

Further degradation of representativeness through coalition building. The governing coalition, CDU/CSU–SPD, has policy representation indices of ca. 45%, lower than the Bundestag before the coalition formation. Therefore, coalition building can reduce the parliament’s policy representation.

Political warning. When re-elected, the moderate governing parties get faulty feedback on their unpopular policies. If the discrepancy between the population and the government increases, it sets the stage for more representative but also more extreme parties to get elected.

Negligible role of question weighting. The policy representation indices are relatively insensitive to question weighting. Therefore, the mean index or impartial unweighted index can be used.

5 Appendix. Public opinion polls relevant to the Wahl-O-Mat questions

References

- [1] Minimum wage. Introduce a nationwide minimum wage.

Survey question: Einführung eines gesetzlichen Mindestlohns — Befürwortung oder Ablehnung? (Infratest dimap, 2013, Jun 3–4, 1003 interviews; pros 86%, cons

- 12%). http://www.mindestlohn.de/w/files/umfrage/infratest-6-2013/2013.06.05-wegewerk_mindestlohn-graf.pdf. Cited 3 Oct 2013
- [2] Childcare subsidy. Childcare subsidy for parents whose kids do not attend state-sponsored day care
- Survey question: Betreuungsgeld — Auch künftig zahlen oder für Ausbau von Kitas verwenden? (Infratest dimap, 2013, 29–30 Jul, 1003 interviews; pros 20%, cons 77%). http://www.infratest-dimap.de/fileadmin/_migrated/content_uploads/dt1308_bericht_01.pdf. Cited 11 Apr 2016
- [3] Speed limit. Introduce a general speed limit on highways
- Survey question: Einführung eines generellen Tempolimits von 120 oder 130 km/h auf den deutschen Autobahnen (Infratest dimap, 2012, 9–10 Oct, 1000 interviews; pros 53%, cons 49%). <http://www.infratest-dimap.de/umfragen-analysen/bundesweit/umfragen/aktuell/ard-markencheck-adac/>. Cited 4 Oct 2013
- [4] Euro. Germany should retain the Euro as its currency
- Citation: ‘Wie eine repräsentative Umfrage des Forsa-Instituts für das Handelsblatt (Dienstausgabe) zeigt, sind heute 69 Prozent der Deutschen dafür, das neue Geld zu behalten. Nur 27 Prozent wollen wieder zurück zur D-Mark.’ <http://www.handelsblatt.com/politik/deutschland/exklusivumfrage-deutsche-finden-den-euro-gut/8037270.html>. Cited 3 Oct 2013
- [5] Electricity prices. Electricity prices should be more heavily regulated by the state
- Survey question: Halten Sie die Preise für Energie- und Heizkosten für fair? (2009, 11–13 Nov, 1225 interviews; pros 90%, cons 10%). <http://de.statista.com/statistik/daten/studie/152898/umfrage/bewertung-der-preise-fuer-energie-und-heizung/>. Cited 3 Oct 2013
- [6] Video surveillance. Video surveillance in public spaces should be expanded
- Survey question: Ausweitung der Videoüberwachung auf öffentlichen Plätzen und in Bahnhöfen (Infratest dimap 2012, 18–19 Dec, 1000 interviews; pros 81%, cons 18%). <https://www.infratest-dimap.de/umfragen-analysen/bundesweit/umfragen/aktuell/grosse-mehrheit-der-buerger-fuer-verstaerkte-videoueberwachung/>. Cited 4 Oct 2013
- [7] Basic income. Germany should introduce an unconditional basic income
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- [8] Organic agriculture. Only organic agriculture should receive financial incentives
- Survey question 3: What do you think is most important that tax-payers’ money paid to farmers should be used for? [sic] (TNS-Germany, 11–12 Jan 2013, 1003 interviews; pros 76%, cons 23%). http://www.wwf.de/fileadmin/fm-wwf/Publikationen-PDF/European_opinion_on_the_use_of_public_money_in_the_agricultural_sector.pdf. Cited 04 Oct 2013
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- Survey question: Finden Sie die Forderung nach Einführung einer Einheitsschule richtig? (Forsa, 20–22 Nov 2009, 1013 interviews; pros 33%, cons 60%).

<http://de.statista.com/statistik/daten/studie/1565/umfrage/meinung-zur-einfuehrung-einer-einheitsschule-in-deutschland/>. Cited 7 Oct 2013

- [10] Top income tax rate. The top income tax rate should be increased

Survey question: Derzeit wird in Deutschland diskutiert, die Steuern für Menschen mit höheren Einkommen zu erhöhen. Fänden Sie dies richtig oder nicht richtig? (Infratest dimap, 5–7 Jun 2013, 1010 interviews; pros 75%, cons 22%). <https://www.infratest-dimap.de/umfragen-analysen/bundesweit/umfragen/aktuell/steuerplaene-zur-steuererhoehung-von-gruenen-und-spd-stossen-nicht-nur-in-der-eigenen-anhaengerschaf/>. Cited 4 Oct 2013

- [11] Leaving NATO. Germany should leave NATO

Survey question: Glauben Sie, dass die NATO auch in Zukunft ihren Verteidigungsaufgaben gerecht wird oder sollte sie grundlegend neu ausgerichtet werden? (TNS Emnid, 30 Mar 2009, 1000 interviews; pros 52%, cons 36%). <http://de.statista.com/statistik/daten/studie/5262/umfrage/zukunft-der-nato/>. Cited 7 Oct 2013

- [12] Coal-fired power. No new construction of coal-fired energy plants

Survey question: Zur Stromerzeugung in der Nachbarschaft finden sehr gut bzw. gut Kohlenkraftwerk (TNS-Emind, Sep 2013, 1003 interviews; pros 60%, cons 31%). <http://www.unendlich-viel-energie.de/de/panorama/akzeptanz-erneuerbarer-energien/grafiken-umfrage-2013.html>. Cited 4 Oct 2013

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Deutsche Apotheker Zeitung (16 Mar 2012) *DAZ.online-Umfrage ‘Pille danach’ — auch bei uns rezeptfrei?*; pros 68%, cons 32%. <http://www.deutsche-apotheker-zeitung.de/pharmazie/news/2012/03/16/pille-danach-auch-bei-uns-rezeptfrei/6787.html>. Cited 6 Oct 2013

- [14] Nationalization of banks. All banks in Germany should be nationalized

Survey question: Halten Sie es für richtig, dass Banken im äußersten Notfall verstaatlicht werden? (Forsa Institut 19–20 Feb 2009, 1004 interviews; pros 60%, cons 31%). *Stern.de* (2009, 25 Feb). <http://www.stern.de/politik/deutschland/forsa/stern-umfrage-deutsche-fuer-banken-verstaatlichung-655878>. Cited 4 Oct 2013

- [15] Refugee policy. Germany should accept more refugees

Survey question: Nach den politischen Umbrüchen in Nordafrika hat Italien rund 23000 Flüchtlinge aufgenommen, darunter viele aus Tunesien. Was meinen Sie: Sollte auch Deutschland Flüchtlinge aus Nordafrika aufnehmen? (Infratest dimap, 12–13 Apr 2011, 1000 interviews; pros 39%, cons 56%). <https://www.infratest-dimap.de/umfragen-analysen/bundesweit/umfragen/aktuell/mehrheit-der-deutschen-gegen-aufnahme-von-fluechtlingen-aus-nordafrika/>. Cited 4 Oct 2013

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Online survey 'Wie gerecht ist BAFöG?' (106 answers; pros 51%, cons 22%). <http://www.unicum.de/forum/foerderung-zuschuesse/890-umfrage-wie-gerecht-ist-bafoeg.html>. Cited 4 Oct 2013
- [19] Border control. Border control should be re-introduced at all German border crossings
Survey question: Innenminister Friedrich und sein französischer Kollege haben die Wiedereinführung von Grenzkontrollen innerhalb des Schengenraums gefordert. Was denken Sie? (Open online-survey with 1680 votes at the time; pros 48%, cons 52%). <http://www.tagesspiegel.de/politik/illegale-einwanderung-forderung-nach-grenzkontrollen-stoesst-auf-scharfe-kritik/6533486.html>. Cited 4 Oct 2013
- [20] Female quote. Institute a legal quota for women on company governing boards
Survey question: Der Bundestrat hat die Einführung einer Frauenquote für Aufsichtsräte börsennotierter Aktiengesellschaften beschlossen. Danach sollen bis zum Jahr 2023 40 Prozent der Aufsichtsräte weiblich sein. Der Bundestag muss darüber noch abstimmen. Befürworten Sie die Einführung einer gesetzlichen Frauenquote für Aufsichtsräte oder sollte es freiwilligen Verpflichtungen der Unternehmen bleiben? (Infratest dimap 25–26 Sep 2012, 1000 interviews; pros 31%, cons 65%). <https://www.infratest-dimap.de/umfragen-analysen/bundesweit/umfragen/aktuell/mehrheit-fuer-beibehaltung-des-rentenniveaus-buerger-eher-skeptisch-gegenueber-gesetzlicher-frauen/>. Cited 4 Oct 2013
- [21] Financial equalization of states. Financially stronger federal states should less support weaker federal states
Survey question: Ist der Länderfinanzausgleich gerecht? (Freie Welt, 5–12 Feb 2013, 3210 votes; pros 9%, cons 86%). <http://www.freiewelt.net/umfragen/ist-der-landerfinanzausgleich-gerecht-50075/>. Cited 4 Oct 2013
- [22] Retirement at 67. The legally mandated retirement age should be lowered again
Survey question: Wiedereinführung der Rente mit 65 Jahren (Infratest dimap, 27–29 Jul 2010, 1000 interviews; pros 73%, cons 17%). <https://www.infratest-dimap.de/umfragen-analysen/bundesweit/umfragen/aktuell/volksentscheide-wuerden-rente-mit-65-und-afghanistan-abzug-erwirken/>. Cited 4 Oct 2013
- [23] Immigrants in public services. The government should employ more people with immigrant background
No available data on public opinion
- [24] Exports of munitions. Exports of munitions should be forbidden
Citation: 'Vom 04.10.–05.10.2011 wurden 1005 Personen quer durch alle Bevölkerungsschichten, Alters- und Einkommensgruppen zu diesem Thema befragt. Die deutliche Mehrheit der Befragten, nämlich 78%, sind gegen jeglichen Rüstungsexport. 20% sind nicht grundsätzlich gegen Rüstungsexporte.' (1005 interviews; pros 78%, cons 20%). <http://www.waffenexporte.org/2011/10/waffenexport-telegramm-nr-4/>. Cited 4 Oct 2013

- [25] Income tax. Retain the tax law that favors the spouse who earns much less than the other spouse or nothing
 Survey question: Finde ich gut ... Ehegattensplitting, das steuerlich entlastet, wenn ein Ehepartner sehr viel weniger als der andere oder gar nichts verdient (p. 10) and second question: Befürworte ich ... Abschaffung des Ehegattensplitting (p. 12). (1000 interviews; pros 81%, cons 16%) http://www.eltern.de/c/pdf/ELTERN_forsa-Studie_Wahl.pdf. Cited 4 Oct 2013
- [26] EU-membership for Turkey. Germany should champion Turkey's bid for EU membership
 Citation: 'Nur 27 Prozent sind für die Aufnahme der Türkei in die EU in einigen Jahren, 68 Prozent sprechen sich dagegen aus.' (Forschungsgruppe Wahlen, 25–27 Jun 2013, 1276 interviews; pros 27%, cons 68%). <http://www.presseportal.de/pm/7840/2502931/zdf-politbarometer-juni-ii-2013>. Cited 4 Oct 2013
- [27] Supplementary income. Bundestag members should reveal their supplementary income to the last Euro
 Survey question: Sollen Bundestagsabgeordnete ihre Nebeneinkünfte vollständig offenlegen müssen? (Forschungsgruppe Wahlen, 8–10 Oct 2012, 1225 interviews; pros 76%, cons 20%). <http://de.statista.com/statistik/daten/studie/244018/umfrage/meinung-zur-offenlegung-der-nebeneinkuenfte-von-bundestagsabgeordneten/>. Cited 4 Oct 2013
- [28] EII-contribution. Energy-intensive industries should bear more of the transition to renewable energy costs
 Survey question: Halten Sie die Befreiung energieintensiver Industriebetriebe von der EEG-Umlage für richtig? (ZDF-Politbarometer 23–25 Oct, 1286 interviews; pros 81%, cons 15%). <http://de.statista.com/statistik/daten/studie/245820/umfrage/meinung-zur-sonderregelung-der-industrie-bezueglich-der-eeg-umlage/>. Cited 4 Oct 2013
- [29] Sanctions against recipients of ALG II. Reduce long-term unemployment benefits for those who turn down a job offer
 Glatzer W et al. (2009) *Einstellungen zum Sozialstaat III: Sechs Fragen zur Akzeptanz der sozialen Sicherung in der Bevölkerung*. Verlag Barbara Budrich, Opladen, und Farmington Hill. Reference to a representative 2008 survey with the question 'Keine Leistung bei Ablehnung von zumutbarer Arbeit', für ALG II (p. 69); pros 50%, cons 50%.
- [30] Church tax. The state should continue to collect tithes on behalf of religious institutions
 Citation: 'Mehr als zwei Drittel der Deutschen (69 Prozent) hält die Kirchensteuer für nicht mehr zeitgemäß. Das ist das Ergebnis einer nach eigenen Angaben repräsentativen Umfrage der "Bild am Sonntag". Hierfür hatte das Institut Emnid insgesamt 500 in der Bundesrepublik lebende Personen ab 14 Jahren befragt. Lediglich 31 Prozent wollen an der Kirchensteuer festhalten.' *Unsere Kirche* (2011, 25 Sep). Pros 31%, cons 69%. [http://www.unserekirche.de/gesellschaft/aktuell/mehrheit-hlt-kirchensteuer-fr-nicht-mehr-zeitgem_7637.html](http://www.unserekirche.de/gesellschaft/aktuell/mehrheit-hlt-kirchensteuer-fr-nicht-mehr-zeitgem-_7637.html). Cited 4 Oct 2013
- [31] Public health insurance. All citizens should be required to enroll in the public health insurance system
 Survey question: Sollen privat und gesetzlich Versicherte gleich behandelt werden? (TNS Emnid, August 2013, 1002 interviews; pros 83%, cons 16%). <http://www.vzbv.de/12172.htm> and <http://www.vzbv.de/cps/rde/xbcr/vzbv/gesundheitsystem-umfrage-vzbv-2013.jpg>. Cited 4 Oct 2013

- [32] Eurobonds. Every state in the Euro zone should be liable to pay its own debts
 Survey question: Der Bundestag wird am Donnerstag in einer Sondersitzung über Finanzhilfen für Spanien im Rahmen des europäischen Rettungsschirmes entschieden. Finden Sie es richtig, dass nun auch Spanien finanzielle Hilfe zur Bewältigung der Euro- und Finanzkrise erhalten soll oder finden Sie das nicht richtig? (Infratest dimap, 17–18 Jul 2012, 1000 interviews; pros 52%, cons 38%). <https://www.infratest-dimap.de/umfragen-analysen/bundesweit/umfragen/aktuell/die-haelfte-der-deutschen-spricht-sich-gegen-finanzhilfen-fuer-spanien-aus-zustimmung-und-ablehnu/>. Cited 4 Oct 2013
- [33] Adoption rights for homosexuals. Homosexual couples should be allowed to adopt
 de.statista (2013) *Adoption von Kindern durch homosexuelle Paare. Sollte homosexuellen Paaren die Adoption von Kindern erlaubt sein?* (Institut für Mittelstandsforschung Bonn 2010; pros 63%, cons 30%). <http://de.statista.com/statistik/daten/studie/169561/umfrage/meinung-zur-adoption-von-kindern-durch-homosexuelle-paare/>. Cited 4 Oct 2013
- [34] Preventive collection of communication data. No collection of communication data (e.g. telephone, internet) without probable cause
 Citation: ‘Trotz der Begründung, dass dies zur Bekämpfung von Terrorismus und Kriminalität geschehe, sind 65 Prozent gegen die bekanntgewordenen Datensammel-Aktivitäten der Geheimdienste der USA und Großbritanniens im Internet. Lediglich 30 Prozent halten solche Maßnahmen für gerechtfertigt.’ (Forschungsgruppe Wahlen, 25–27 Jun 2013, 1276 interviews; pros 65%, cons 30%). <http://www.presseportal.de/pm/7840/2502931/zdf-politbarometer-juni-ii-2013>. Cited 4 Oct 2013
- [35] Rental price constraint. Limit rent price increases, also upon turnover of renters
 Survey question: Eine gesetzliche Begrenzung von Mieterhöhungen bei Neuvermietungen (Infratest-dimap, 20–21 Aug 2013, 1000 interviews; pros 73%, cons 25%). <https://www.infratest-dimap.de/umfragen-analysen/bundesweit/umfragen/aktuell/gerechtigkeit-staat-ist-gefordert/>. Cited 4 Oct 2013
- [36] Double citizenship. German citizens should not be allowed to hold additional nationalities
 Citation: ‘Auf die Frage “Sollte man bei der Einbürgerung in Deutschland grundsätzlich die ausländische Staatsbürgerschaft behalten dürfen?” antwortete die Mehrheit der Deutschen mit “ja” (53 Prozent) und die Minderheit mit “nein” (42 Prozent).’ (Forsa Institut, 22 Apr–30 Mai 2013, 1000 interviews with German citizens; pros 42%, cons 53%). <http://www.baden-wuerttemberg.de/de/service/presse/pressemitteilung/pid/aktuelle-umfrage-zur-hinnahme-von-mehrstaatigkeit/>. Cited 4 Oct 2013
- [37] Passenger-car toll on highways. Institute a passenger-car toll on the national highway
 Citation: ‘Eine exklusive Forsa-Umfrage für Handelsblatt Online unter 1.001 Befragten ergibt: 41 Prozent der Deutschen lehnen eine Pkw-Maut ab. Doch 35 Prozent sind für eine Pkw-Maut nur für Ausländer. Und weitere 22 Prozent würden gerne alle Autofahrer auf Autobahnen zur Kasse bitten.’ (Forsa Institut 19–20 Sep 2013, 1001 interviews; pros 22%, cons 57%). <http://www.handelsblatt.com/politik/deutschland/bundestagswahl-2013/forsa-umfrage-deutsche-bestaetigen-merkel-im-maut-streit/8845234.html>. Cited 4 Oct 2013
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 Survey question: In der Schweiz fand am vergangenen Wochenende eine Volksabstimmung statt. Sollten auch in Deutschland Volksabstimmungen über strittige Themen abgehalten werden? (Emind 2013 Mar 7, 502 interviews; 87% pros, cons 11%). <http://www.volksentscheid.de/9876.html>. Cited 4 Oct 2013

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Improving policy representation of the German Bundestag by an alternative election method. Part II: Proposal

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Abstract

Since voters are often swayed more by the charisma, personal image and communication skills of the individual candidates standing for election than by the parties' political manifestos, they may cast votes that are actually in opposition to their policy preferences. Such a type of behavior, known as 'irrational voting', results in the election of representatives who do not correspond exactly to the voters' own views. This is illustrated in Part I of this paper, 'Analysis', using the example of 2013 German Bundestag (federal) election.

Part II of the paper proposes an alternative election method, whereby the voters' policy preferences are taken into account explicitly by means of embedded referenda, testing the matching of the candidates' policy profiles with that of the electorate. Then the parties are indexed, not with respect to the percentage of votes received but with respect to their representativeness indices of popularity (the average percentage of the population represented) and universality (frequency in representing a majority), as introduced in Part I. The method is then hypothetically applied to redistribute the Bundestag seats among the party factions, producing a considerable gain in the representativeness of the Bundestag. Finally, we discuss mixed election procedures combining the elements of traditional voting schemes with the proposed method.

Keywords: Policy representation, representative democracy, direct democracy, elections, coalitions, theory of voting.

JEL Classification: D71

1 Introduction: concepts of representation and the implementation thereof

The idea of political representation dates back to [Hobbes 1651, *Leviathan*, Ch 16]. However, according to [Pitkin 1967, pp. 14–37], his treatment of the subject is monarchical-tendentious, inconsistent and merely of historical interest. Rather, the modern concepts of political representation are attributed to the American and French Revolutions of the late 18th century. All of them are based on the delegation of powers with interaction between the electorate and the elected, differing chiefly in how strictly the delegates are bound by the electorate's preferences.

The etymology of the word 'represent' is 're-' (back, again – recall) plus 'present'. Among its meanings, one finds 'to portray' and 'to correspond to in essence' [Merriam-Webster 2016].

According to these meanings, an assembly should be a condensed reflection of the society for which it speaks, proportionally representing its most important groups. In the United States of America, this approach was defended by the Anti-Federalists, particularly by John Adams (1735–1826), one of its key Founding Fathers, its first vice-president and second president:

The principal difficulty lies, and the greatest care should be employed, in constituting this representative assembly. It should be in miniature an exact portrait of the people at large. It should think, feel, reason, and act like them. That it may be the interest of this assembly to do strict justice at all times, it should be an equal representation, or, in other words, equal interests among the people should have equal interests in it.

[Adams 1776, *Thoughts on Government*, p. 195]

In France, the same viewpoint was shared by Honoré Gabriel Riqueti, comte de Mirabeau (1749–1791), a statesman, moderate revolutionary and promoter of a British-like constitutional monarchy. On January 30, 1789, before the new convocation of the Estates General, Mirabeau said:

The Estates are to the nation as a reduced map is to its physical extent: whether in whole or in part, the copy must always have the same proportions as the original.

[Mirabeau 1789, *Discours prononcés à la tribune nationale*, p. 7]

This type of representation, called by [Pitkin 1967, p. 60] ‘descriptive’, suggests that the delegates naturally make the same choices and vote on propositions in the same way as their electors would do, because they resemble their fellow countrymen and belong to the same constituencies. An assembly, however, should be sufficiently large to reflect the diversity of social groups in their true proportion. For instance, in the U.S. Constitution ratification debate, the Anti-Federalists doubted that a relatively small national assembly proposed by the Federalists could adequately mirror a large and heterogeneous population of numerous states.

The descriptive approach finds its extreme expression in the ‘mandate theory’. Under its provisions, the function of representatives as transmitters of the will of their constituencies is enhanced by binding instructions to the elected, or imperative mandates. The final effect is similar to that of descriptive representation except that representation of the constituency’s will is legally secured [Manin 1997, p. 111].

The American Federalists had a different view of representation. They considered representatives as the people’s trustees, possessing high civil virtue and competence, who make decisions independently and serve the country using their advanced political skills. Representatives of this type are empowered agents of the people, similar to lawyers, who proceed on behalf of their clients, or like bankers, who make investments for their depositors. According to Alexander Hamilton (1755–1804), one of the Founding Fathers and the first United States Secretary of the Treasury, and James Madison (1751–1836), Father of the Constitution and the fourth president of the USA, such delegates would not betray the electorate because of their approbated high reputation, their self-respect, their own vanity, the frequency of election, and their subordination to the laws they would adopt for everyone — including themselves:

In the first place, as they will have been distinguished by the preference of their fellow-citizens, we are to presume that in general they will be somewhat distinguished also by those qualities which entitle them to it . . .

In the second place, they will enter into the public service under circumstances which cannot fail to produce a temporary affection at least to their constituents. There is

in every breast a sensibility to marks of honor, of favor, of esteem, and of confidence, which, apart from all considerations of interest, is some pledge for grateful and benevolent returns. . . .

In the third place, those ties which bind the representative to his constituents are strengthened by motives of a more selfish nature. His pride and vanity attach him to a form of government which favors his pretensions and gives him a share in its honors and distinctions. . . .

All these securities, however, would be found very insufficient without the restraint of frequent elections. Hence, in the fourth place, the House of Representatives is so constituted as to support in the members an habitual recollection of their dependence on the people. . . .

I will add, as a fifth circumstance in the situation of the House of Representatives, restraining them from oppressive measures, that they can make no law which will not have its full operation on themselves and their friends, as well as on the great mass of the society.

[Hamilton and Madison 1788, *Federalist Papers*, 57]

For this type of independent representative, the requirements of belonging, likeness or resemblance are irrelevant, and the assembly can be relatively small. Therefore, for a large country with heterogeneous populations, the ‘agent’ conception of representation is more suitable than the descriptive one, which requires large representative bodies. However, as with the scruples of lawyers and bankers, the principled conscientiousness of the people’s agents can be always called into question; at any rate, the assembly risks becoming a ‘club’ of politicians for its own sake, and one should take it with a grain of salt. Nevertheless, the Federalist elitist approach prevailed over the Anti-Federalist ‘likeness’ (descriptive) approach.

In revolutionary France, the same elitist view of politics was promoted by the conceptualist of representative government, abbot Emmanuel Joseph Sieyès (1748–1836). In January 1789, Sieyès published his famous anticlerical and anti-aristocratic pamphlet, *Que’est-ce que le Tiers-État?* (*What Is the Third Estate?*), in which he answers one of central questions, ‘What is necessary that a nation should subsist and prosper?’, with ‘Individual effort and public functions’ [Sieyès 1789]. The interaction between the people, embodying the ‘individual effort’, and the government charged with the ‘public functions’ is viewed from the standpoint of the efficient division of labor. Since people in ‘commercial societies’ are primarily occupied in production and trade, it is unreasonable to burden them with time-consuming ‘public functions’ that could be much better performed by elected professionals. ‘The common interest,’ writes Sieyès later in 1789, ‘the improvement of the state of society itself cries out for us to make Government a *special profession*’ [Manin 1997, p. 3].

The conception of representation shapes the implementation of representative government. Distinguishing between the descriptive and agent conceptions is important because they imply different electoral systems and different methods of allocating parliament seats:

These two senses of *represent* are both in general use. However, not only are they not the same, they can be inconsistent. There is no reason why legislators elected by a system that somehow maps the people in Mirabeau’s sense should individually regard themselves as agents, still less that they should in aggregate and, conversely, no reason why legislators who are agents of the people should be a microcosm of them . . . The first leads obviously to proportional representation (PR) and to multimember districts (since exploring PR soon reveals that Adams’s and Mirabeau’s ideals cannot be achieved in a system of single-member districts). The second leads to majoritarianism: an individual legislator is a true agent of the voters if and only

if he or she represents a majority of them and a legislature is representative in aggregate if it is accepted by a majority of all the electors.

[McLean and Urken 1995, *Classics of Social Choice*, pp. 43–44]

Sometimes the two major concepts of representation are mixed. For instance, the seats in the European Parliament are distributed according to the principle of degressive proportionality, i.e., the larger the state, the more citizens are represented by each parliament member (as of 2014, Germany with its 80.9 million inhabitants has 96 seats, i.e. one seat per 843,000 inhabitants, whereas Malta with 0.4 million inhabitants has 6 seats, i.e. one seat per 70,000 inhabitants) [European Parliament 2016]. This rule is a compromise between the descriptive (proportional) and the agent conceptions of representation (‘one country, one vote’, as used in many international organizations).

Regardless of these differences in understanding representation, it is always assumed that the people govern themselves through elected representatives. The most restrictive ‘mandate’ conception supposes that the will of the electorate is represented one-to-one in the assembly, whereas the most relaxed agent conception suggests that a certain independence of competent representatives would serve the public interest even better. However, in all cases, the will of the people is intermediated, which raises a number of questions about the relation of representative government to democracy. These doubts were expressed as early as the mid-18th century by Jean-Jacques Rousseau (1712–1778):

The people of England regards itself as free; but it is grossly mistaken; it is free only during the election of members of parliament. As soon as they are elected, slavery overtakes it, and it is nothing. The use it makes of the short moments of liberty it enjoys shows indeed that it deserves to lose them.

The idea of representation is modern; it comes to us from feudal government, from that iniquitous and absurd system which degrades humanity and dishonors the name of man. In ancient republics and even in monarchies, the people never had representatives; the word itself was unknown. It is very singular that in Rome, where the tribunes were so sacrosanct, it was never even imagined that they could usurp the functions of the people, and that in the midst of so great a multitude they never attempted to pass on their own authority a single plebiscitum. We can, however, form an idea of the difficulties caused sometimes by the people being so numerous, from what happened in the time of the Gracchi, when some of the citizens had to cast their votes from the roofs of buildings.

[Rousseau 1762, *Social Contract*, Book III, 15]

Thus, each concept of representation has both advantages and disadvantages; each requires a particular implementation and a particular electoral system. The question is in fact about *how well* the public interest is represented. Indeed, the higher quality the representation, the higher the people’s impact on policy making and, consequently, the ‘more democracy’. However, two and half centuries after Rousseau, the question remains open how, exactly, political representation is related to government by the people, or democracy:

Which of these two types of indirectness — or indeed what other type — best represents the role of political representatives and the power the people have over them? The modern view of representative democracy as indirect government by the people tells us nothing here. In reality, the information provided by the usual distinction between direct and representative democracy is meager. The uncertainty and poverty

of our modern terminology, like the contrast that it presents with the perception of the eighteenth century, show that we do not know either what makes representative government resemble democracy or what distinguishes it therefrom. Representative institutions may be more enigmatic than their place in our familiar environment would lead us to believe.

[Manin 1997, *Principles of Representative Government*, p. 5]

This theoretical difficulty has practical consequences. The divergence between the people and the government has been illustrated in Part I of this paper, using the 2013 German federal election. The deficit of policy representation revealed there results in the Bundestag's independence of public opinion, which can be hardly accepted as normal. Although both major concepts of representation leave politicians some room for free decisions, they nevertheless do not allow neglect of the electorate will.

To enhance the quality of political intermediation, the notion of *policy representation* has been introduced; see Introduction to Part I of this paper for references. This notion complements the descriptive and agent conceptions in the following way: the descriptive conception is focused on the question '*Who is represented?*', the agent conception on '*Who are representatives?*'; but both disregard the question '*What is represented?*' — the subject of policy representation. It is not surprising that the latter is missing from the debates of the 18th century, when the idea of representation was coined. The acute questions of that time were voting rights, property qualifications, gender restrictions, assembly composition, etc., that is, who should vote (who is represented), and eligibility conditions for public offices, that is, who can be elected and to which offices (who are representatives). The uneducated common folk had no policy preferences on most policy issues (with a few exceptions for voting rights, equality before the law or taxation); the communication possibilities were limited, and politicians seldom, if ever, made their positions on every issue public. Since political decisions were entrusted to elected representatives, government by the people was not on the agenda; furthermore, the Founding Fathers of the United States were explicitly against democracy [Manin 1997, Ch. 3]. Correspondingly, neither the American Constitution nor any Amendment to it ever refer to democracy; democracy is completely missing in the French post-revolutionary constitutions [Tangian 2014, p. 192]. As [Held 2006, p. 1] notes, 'a general commitment to democracy is a very recent phenomenon'.

On our times, the situation is different. The voting rights and eligibility for offices are no longer disputed, because all restrictions for citizens are removed. The population has become more advanced politically, mass media make information available, and politicians' programs are publicly discussed. Policy representation is becoming more important as bridging representative government with government by the people. Nevertheless, candidates' policy preferences and party manifestos are often overlooked, resulting in 'irrational voting' as reviewed in Introduction to Part I. Factually, the question '*What is represented?*' is still insufficiently elucidated, and voting for candidates by name bears a part of responsibility for that.

The analysis made in Part I is visualized in Figure 1, in which the German parties are ordered by decreasing number of votes received in 2013. Here, the irregular broken curve (in black) of the mean index of policy representation computed in Part I exhibits no statistically significant dependence on the number of electoral votes received by a party. Furthermore, there is a slight opposite trend: the fewer the votes, the higher the representativeness. In other words, a party's electoral success does not depend on its capacity for policy representation.

At the same time, Figure 1 demonstrates a very high and statistically very significant correlation between the number of party members and the votes received. As highlighted at the top of the figure, the correlation between the party size and votes received is as high as 0.9835 with P-value < 0.00005 . The causality in this strong dependence is likely two-way. On the one hand,

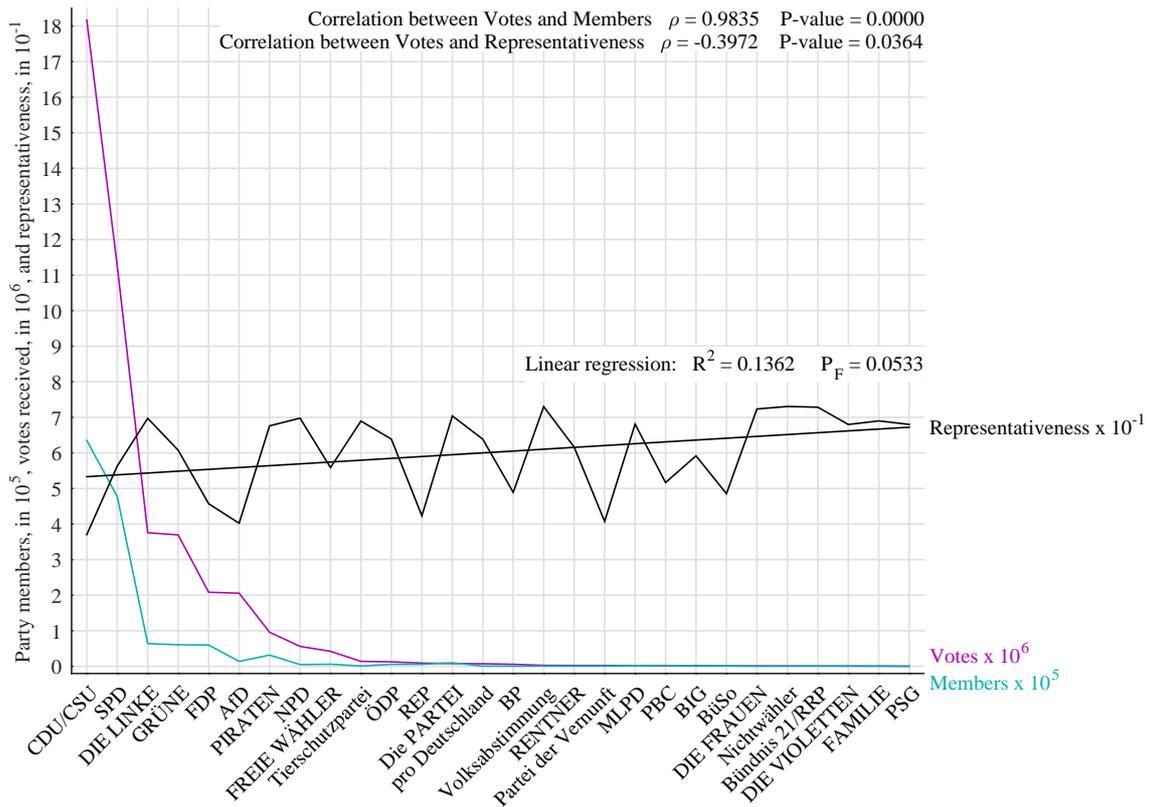


Figure 1: Party sizes, votes received, and mean representativeness indices of German parties in the 2013 federal election

large parties with proven leadership qualities enjoy established reputations, have large networks, raise considerable funds for electoral campaigns and are constantly presenting themselves in the media. On the other hand, the electoral success itself attracts members by political inclusion, participation in policy making and by enhancing personal influence and career prospects. All of these relate rather to the near-party circles than to the whole of citizenry, and large parties that win elections are not necessarily highly representative. This is generally inherent in one-party systems, and, as shown in Part I, it is also true for Germany.

It looks that election methods based on voting for candidates by name are designed for the two major concepts of representation — descriptive and ‘agent’ — but not for the concept of policy representation. These election methods divert the voters’ attention away from specific policies, focusing on personalities and political labels. Regarding policy representation, this can result in the election of ‘wrong’ parties and in ‘wrong’ coalition formation. Since the two major types of representation are backed up by their own election methods, it would be natural to enhance the third type of representation, policy representation, with a dedicated voting procedure.

Taking into account the results of Part I of our study, Part II develops an alternative voting procedure. The goal is to redirect the electorate’s attention away from candidates as personalities and from parties as abstract ideological symbols toward their specific abilities to speak on behalf of the public and represent public opinion on various policy issues. In other words, the question ‘*Whom* are we electing?’ is to be replaced by ‘*What* are we electing?’ For this purpose, electoral ballots are proposed to include questions about the voter’s position on key issues in candidate manifestos (Introduce a nationwide minimum wage? Yes/No; Introduce a speed limit on German motorways? Yes/No; etc.). The procedure envisages evaluating the candidates by

the degree to which their policy preferences match with that of the electorate. The degree of conformity can be measured, for instance, using the representativeness indices of popularity (the average percentage of the population represented) and universality (frequency in representing a majority) introduced in Part I. In contrast to habitual voting, here the candidates receive no votes. Rather, the embedded referendum on a sample of issues serves as a direct-democracy test of the candidates.

Section 2, ‘Alternative election architectures’, explains that the order of operations in voting can lead to different election outcomes with different policy representation effects.

Section 3, ‘Adding the third vote to German ballots’ proposes a scenario of German electoral reform. For illustration, the method is used to hypothetically redistribute seats in the German Bundestag, resulting in a considerable gain in its representativeness.

Section 4, ‘Discussion’, is devoted to several aspects of implementation of the election procedure proposed: selection of questions, dealing with unrealistic electoral pledges, combinations with traditional voting methods and some others.

Section 5, ‘Conclusions to Part II’, recapitulates the main statements of the paper.

2 Alternative election architectures

Before continuing, we comment on *election architecture*, drawing an analogy to ‘software architecture’ in computer science to characterize the order of operations. Let us illustrate alternative architectures and their impact on the election outcome with an example, which idea goes back to Ostrogorski’s paradox [Nurmi 1999, pp. 70–73] and [Gehrlein and Lepelley 2011, pp. 123–124].

Suppose that the editor of an academic journal must accept or reject a paper evaluated by three reviewers with regard to three equally important criteria: (1) new findings, (2) awareness of literature, and (3) presentation and style. The positive and negative opinions of the reviewers are shown in Table 1. The table displays two *architectures* for the evaluation procedure. The first architecture has the order of operations $\Downarrow \rightarrow$. It assumes that opinions are first aggregated individually by each reviewer, resulting in votes either for (+) or against (–) acceptance of the article. Then these votes are accounted to make the final decision. Under this architecture, the paper is rejected by two out of three votes. The second architecture has the order of operations $\Rightarrow \Downarrow$. It assumes that a collective opinion is made for each criterion, and then these partial opinions are aggregated to make the final decision. Under this architecture, the paper is accepted.

Table 1: Two architectures of editorial decisions based on three reviews

Criterion	Reviewers			Majority vote	Collective opinion
	1	2	3		
New findings	+	+	–		→
Awareness of literature	+	–	+		→
Presentation and style	+	–	–		→
	↓	↓	↓		↓
Reviewer’s vote	+	–	–	→	–

In fact, what we have just considered is equally applicable to appointing a candidate to an office, or choosing between two candidates labeled ‘+’ and ‘–’. The two architectures have very different background philosophies. The first architecture with the order of operations $\Downarrow \rightarrow$ reflects the liberal philosophy of *individual determination* based on individualism in opinions and on understanding the public good as the sum of the good of every individual, in the spirit of John Locke (1632–1704):

Every man has a “property” in his own “person.” This nobody has any right to but himself. . .

The public good, i.e. the good of every particular member of that society.

[Locke 1689, *Second Treatise of Government*, Chapter 5, 26, and *First Treatise of Government*, Chapter 9, 92]

This philosophy deals with the aggregation of what Rousseau (1712–1778) and Condorcet (1743–1794) called individual wills. Electors choose their favorite candidates themselves, according to their own criteria and without being asked why they cast votes for this or that candidate.

The second architecture with the order of operations $\rightrightarrows \downarrow$ reflects the philosophy of *public determination*. It explicitly articulates the public interest, formulating socially important questions and asking for the electors’ opinions on them. The society is considered a single body that has a political profile regarding these issues, resembling the Rousseauvian *general will*:

Each of us puts his person and all his power in common under the supreme direction of the general will, and, in our corporate capacity, we receive each member as an indivisible part of the whole. At once, in place of the individual personality of each contracting party, this act of association creates a moral and collective body, composed of as many members as the assembly contains votes, and receiving from this act its unity, its common identity, its life and its will. This public person, so formed by the union of all other persons, formerly took the name of *city*, and now takes that of *Republic* or *body politic*. . .

There is often a great deal of difference between the will of all and the general will; the latter considers only the common interest, while the former takes private interest into account, and is no more than a sum of particular wills. . .

[Rousseau 1762, *Of Social Contract*, Book I, 6 and Book II, 3]

The public political profile is used to find the most socially adequate candidate by matching his/her profile to that of the electorate. This architecture enhances the civic aspect of election and reduces the partiality of electors’ opinions. It is often used for evaluating new products, project proposals, scientific contributions, etc., when each referee estimates every quality separately.

This approach is in line with recent business practices. Trying to enhance objectivity in recruitment procedures, some corporations, e.g. l’Oréal, Accor and AXA, evaluate job candidates considering exclusively job-related matters and using anonymous questionnaires without names, photos or any personal information; for an international survey see [Krause et al. 2010, pp. 8–21]. This practice is becoming more widespread, and Germany is even shaping it into legal guidelines [Antidiskriminierungsstelle des Bundes 2010].

3 Adding the third vote to German ballots

Traditionally, elections are based on voting for candidates by name, that is, they use the architecture of individual determination (the first one). In this section it is shown that the architecture of public determination (the second one) can be used as well. The aims are: (a) to redirect the voters’ attention from candidate (party) images to their manifestos and policy proposals, and (b) to enhance policy representation by matching the candidate’s policy profiles with that of the electorate. To be specific, we hypothetically apply the architecture of public determination to the German election procedure.

Recall that the German Bundestag is elected via two votes, the first (*Erststimme*) for a person and the second (*Zweitstimme*) for a party. The first 299 Bundestag members are therefore direct mandate holders, representing 299 local constituencies. They are elected through the first vote by simple plurality within the constituency. The second vote is used (1) to determine the eligible Bundestag party factions (those who have at least 5% of the second national votes or at least three direct mandates) and (2) to make their size (including the party members already elected by the first vote) proportional to the second vote. For this purpose, the next 299 Bundestag seats are distributed among the eligible parties. If the proportion to votes is not accurate enough due to discrepancies between the number of directly elected persons through the first vote and the percentage of seats finally allowed to the party through the second vote, some extra seats, called ‘overhang mandates’, are added [Überhangmandat 2012]. The 2013 Bundestag has 631 seats, including 598 basic and 33 extra seats [Deutscher Bundestag 2013]. Obviously, the second vote is decisive, because it determines the size of the party factions.

Let us imagine that the ballots are complemented by a third vote (*Drittstimme*) asking for the elector’s political profile, as in the voting advice applications, along the lines of the policy issues declared in the party manifestos (Introduce nationwide minimum wage? Yes/No; Introduce a general speed limit on highways? Yes/No; etc.). The first vote, as before, is cast by name for the Bundestag member from the local constituency. The second vote — for a party — is used only to filter out unpopular and untrustworthy parties who receive fewer than 5% of the votes. Thus, the second vote retains only its first filtering function, and its second function — distribution of the Bundestag seats among eligible parties — is conveyed to the third vote.

The third vote is used to determine the political profile of the electorate, similar to the way the collective opinion is formed in Table 1. Then the parties are allocated Bundestag seats in proportion to the degree to which their political profiles (as declared in their manifestos) match with the political profile of the electorate. The degree of matching can be measured, for instance, by the indices introduced in Part I. In a sense, the third vote performs a kind of ‘direct democracy test’— a competitive public examination of the parties, who are evaluated through the election procedure.

To illustrate the election method proposed, we consider the German public profile based on 36 polls of public opinion on 36 policy issues and the political profiles of the four parties eligible for the Bundestag seats considered thus far. Table 2 shows the parties’ unweighted indices of policy representation and the actual size of the Bundestag factions, as well as their size adjusted proportionally to the parties’ mean indices of unweighted popularity and universality. For instance,

$$\begin{aligned} \text{Adjusted seats of CDU/CSU} &= \left(\frac{\overbrace{64 + 58 + 56 + 40}^{40}}{\text{Unweighted popularity indices of the four eligible parties}} + \frac{\overbrace{76 + 63 + 57 + 34}^{34}}{\text{Unweighted universality indices of the four eligible parties}} \right) \times \frac{100\%}{2} \\ &\approx 16.5\% . \end{aligned}$$

The bottom section of the table displays the policy representation indices of the Bundestag before coalition formation, those for a Bundestag adjusted to better represent the policy preferences of the electorate, and, for reference, the maximum attainable indices if majorities in the society were represented on all the policy issues. The indices of the adjusted Bundestag surpass 50%, meaning that it is no longer independent of public opinion although not completely bound by

Table 2: Indices of the four eligible parties, of the Bundestag before coalition formation, and of the Bundestag with its seats redistributed proportionally to the parties’ mean indices

	Bundestag seats	Bundestag seats, adjusted	Popularity	Universality
			unweighted	unweighted
	%	%	%	%
CDU/CSU	49.3/ 1	16.5/ 4	40/ 4	34/ 4
SPD	30.5/ 2	25.2/ 3	56/ 3	57/ 3
DIE LINKE	10.2/ 3	31.2/ 1	64/ 1	76/ 1
GRÜNE	10.0/ 4	27.1/ 2	58/ 2	63/ 2
Bundestag	100	–	51	50
Bundestag, adjusted	–	100	57	61
Absolute max	100	100	73	100

it — exactly as assumed in the modern concept of representation.

Given makeup of the seats in the adjusted Bundestag, the coalition indices of popularity and universality can be computed as in Section 3 of Part I, ‘Evaluation of coalitions’. The results are displayed in Table 3 and illustrated in Figure 2, which is the same as Figure 3 of Part I complemented with the new minimal eligible coalitions distinguished by red flagstuffs. After adjustment, all minimal eligible coalitions are more unanimous and more representative than the actual ones (with blue flagstuffs). The most representative among the adjusted coalitions is SPD–DIE LINKE, the next best is DIE LINKE–GRÜNE, which is most unanimous and, consequently, most probable.

The redistribution of the Bundestag seats is made without explicitly taking into account numerous direct mandates. Due to the party-identifiable first vote, there is a strong correlation between the party seats resulting from the first vote for persons and those stemming from the second vote for parties, which implies rather small adjustments of Bundestag factions with overhang mandates. This is not to be expected with a third vote that bears no explicit party identification. For instance, our application restricts CDU/CSU to only 16.5% of the Bundestag seats, whereas the union received 45.3% of the first votes [Bundeswahlleiter 2014, p. 36]. As one can see, this disproportion is of a quantitative rather than a qualitative nature. The same can occur under the current election method, when a party’s poor results in the second vote must be combined with its numerous direct mandates; so there is no contradiction with the logic of the existing rule.

However, to avoid a large number of overhang mandates, the members of redundant factions (with redundant direct mandates) can be restricted to discounted (fractional) parliament votes. In our application, the union CDU/CSU would not receive any additional Bundestag seats other than its direct mandates that constitute $45.3/2 = 22.65\%$ in the total of the $299 + 299$ Bundestag seats. Then each direct mandate holder would have only $16.5/22.65 \approx 0.72$ of the regular vote.

4 Discussion

Of course, the above hypothetical application to the German Bundestag is just an illustration, and the method proposed is no more than a prototype, a reform scenario which is by no means ready for immediate use. By and large, it is suggested to couple elections with referenda that reveal the public opinion on a number of policy issues.

Table 3: Indices of minimal eligible coalitions for the current Bundestag and for the adjusted Bundestag with redistributed seats (R) (computed for unweighted questions and the impact of member weights on the coalition decisions $p = 0.50$)

Coalitions	Bundestag		Unanimity		Popularity		Universality	
	seats				Expectation	Standard	Expectation	Standard
	%/Rank	%/Rank	%/Rank	%/Rank	%/Rank	deviation	%/Rank	deviation
1 CDU/CSU–SPD	79.8 / 1	66.7 / 2	46.5 / 2	±2.9 / 3	45.0 / 2	±5.8 / 3		
2 CDU/CSU–DIE LINKE	59.5 / 2	33.3 / 4	43.0 / 4	±2.0 / 1	40.1 / 4	±4.2 / 1		
3 CDU/CSU–GRÜNE	59.3 / 3	45.7 / 3	44.1 / 3	±2.5 / 2	42.1 / 3	±4.9 / 2		
4 SPD–DIE LINKE–GRÜNE	50.7 / 4	77.1 / 1	54.4 / 1	±3.4 / 4	56.8 / 1	±6.4 / 4		
Coalitions for redistributed seats								
1R SPD–DIE LINKE	56.3 / 2	80.0 / 3	56.2 / 1	±3.5 / 1	61.5 / 1	±6.5 / 1		
2R SPD–GRÜNE	52.3 / 3	85.7 / 2	54.3 / 3	±3.5 / 2	57.3 / 3	±6.8 / 2		
3R DIE LINKE–GRÜNE	58.3 / 1	94.1 / 1	55.3 / 2	±3.7 / 3	60.4 / 2	±7.1 / 3		

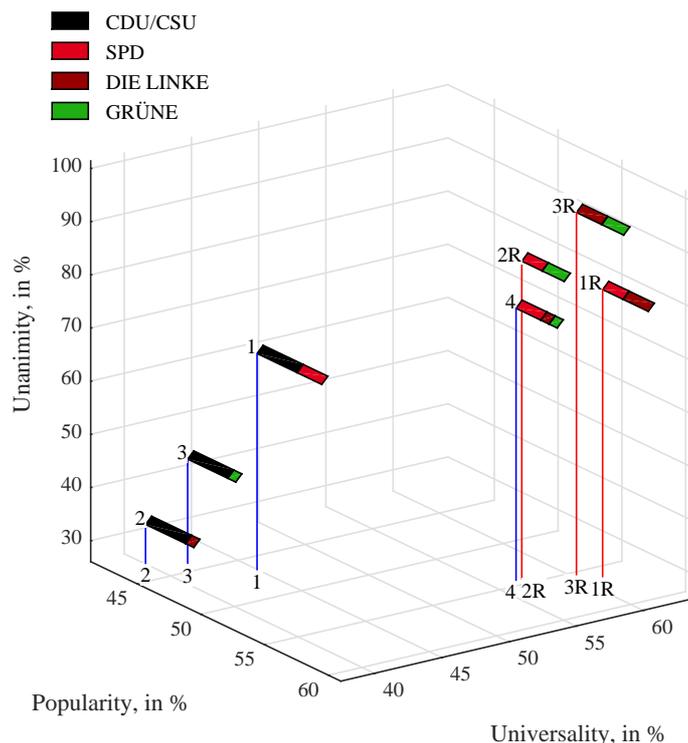


Figure 2: Indices of minimal eligible coalitions for the Bundestag and for the adjusted Bundestag with redistributed seats (R) (computed for unweighted questions and the impact of member weights on the coalition decisions $p = 0.50$)

Elections are often combined with referenda in Switzerland, Canada, the United States and some other countries, where it is done to avoid multiple campaigns for the convenience of the population. Our proposal to use referenda with elections goes further: not only to let the electorate vote on particular actions of the authorities, but to form these authorities with respect to public opinion and general political context. When representatives are tested with referenda, the electorate gains more control over policy making.

Since the proposed election method is based on imbedded referenda, the questions and their wording are of prime importance. To avoid manipulation of electoral outcomes by posing questions favorable for one candidate and unfavorable for others, the questions can be drawn up by the parties themselves. This can be done implicitly, within the party manifestos, or explicitly, by announcing a list of program policy issues. The questions formulated by one party can be shared with all other parties giving them an opportunity to make their positions comparable. Finally, competing parties can negotiate on the questions in order to prevent misinterpretations.

The focus on policies rather than on personal charisma or party ideologies makes elections less emotional, more objective and more *rational*. The current German system with its two votes tends to overcome the electors' subjectivity, and the method described follows this logic of increasing the impartiality of votes. The first vote allows electors to choose their preferred politicians by name, but the partiality of the vote for a person is counteracted by rearranging the Bundestag factions according to the more conceptual and less personified vote for a party. In our procedure, the third vote is linked neither to candidates nor to parties. It allows the electorate to objectively test them with a few questions in the same way as a committee examines students. As explained previously, the political profiles of the candidates (parties) are backed up by a certain worldview, making the answers to different questions strongly interdependent. Therefore, a few questions can provide a reliable basis for specifying the political profiles of both candidates and electors. Thus, the third vote continues the logic of the German two-vote system: the first vote is for a person, the second vote is for a party, and the proposed third vote is for a party policy profile, so that the considerations become progressively more conceptual and less personal.

The focus on policies also hinders strategic voting. Indeed, to cast the third vote more or less rationally, that is, to select preferred policy issues question-by-question, it suffices to rely on common sense and awareness of the current news and policy debates. In contrast to that, to strategically favor a candidate or party by means of the third vote and simultaneously decrease the chances of their competitors, one requires much more knowledge — about the state of political affairs and, additionally, about the detailed candidate profiles with regard to all the policy issues. Therefore, under the method proposed, most of the people would probably not be driven by prejudice and/or calculated intent to influence an election — if only for lack of knowledge.

It is unlikely that all the electorate's preferences could be equally satisfied, particularly due to financial constraints. The politically experienced parties are more realistic in formulating their positions, giving priorities to certain issues. In a sense, they propose feasible programs, from which a solution should be found, whereas the electorate's policy profile serves as a (unattainable) target to match with consistent party programs. This is the problem with judgment aggregation.

To discourage a party from making unrealistic electoral pledges, its index based on the third vote can be discounted if the party did not keep its word as given in the previous campaign. A party can also take a prudent 'neutral' position on most of the issues if it fears repelling electors with (too) definitive statements. Indefinite positions either mean that a party is not ready to represent the public on a broad range of issues or that it is intentionally concealing its plans. When information is lacking, matching the electorate's and the party's profiles with a few issues results in a low statistical confidence in the party index. In such cases the party index can be

discounted as well.

The proposed election method can be combined with the existing one. Voting flexibility is already inherent in the German system — electors may vote for a person without voting for a party, and vice versa. In case of a missing third vote, the second vote can be given the ‘full weight’ by attributing to the ballot a virtual third vote corresponding to the profile of the party indicated in the second vote. This way voters can also enhance their identification with particular parties. To express trust in creditable parties, as opposed to their non-liable competitors who freely over-promise, the second and third votes can be counted in a weighted combination.

To account for the degree of individual preferences, voters may be granted the right to prioritize questions; this information can be included in the calculation of the party indices. The degree of public preference can be measured by the imbalance of public opinion on every question — the greater the imbalance, the stronger the public preference; an imbalance of zero means indifference.

There are plenty of other options which we do not discuss here. In any case, the proposed scheme requires detailed elaboration and approbation, first in small communities.

5 Conclusions to Part II

To enhance the policy representation of a parliament, the electorate’s policy profile is revealed by using ballots that include dichotomous (Yes/No) questions on a number of policy issues. The issues can either be announced by the candidate parties or taken from their manifestos. Then the eligible parties are indexed according to the closeness of their policy profiles to that of the electorate, and the parliament seats are distributed among them in proportion to the indices. A hypothetical application of this method to the 2013 German Bundestag considerably strengthens its policy representation.

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