

# Policy Representation of a Parliament: The Case of the German Bundestag 2013 Elections

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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. To illustrate this, we consider the 28 German parties that took part in the 2013 Bundestag (federal) 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. The next paper, 'An election method to improve policy representation of a parliament' (Tangian 2016), suggests a possible way to surmount the problems revealed by our analysis. An alternative

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This article and an article entitled "An election method to improve policy representation of a parliament (doi:10.1007/s10726-016-9508-4)" discuss the same parliament elections. In doi:10.1007/s10726-016-9507-5, the actual election method is analyzed and in doi:10.1007/s10726-016-9508-4, an alternative method is proposed.

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election procedure is proposed and 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 given paper 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 Tangjan (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,<sup>1</sup> 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.

This 'election failure' can be explained by the known phenomenon of irrational behavior on the part of the voters (Caplan 2006; Bartels 2008, 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. 244–246, 266–271), 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 can-

<sup>1</sup> The capitalization of the party names follows the way the parties themselves do it.

didates' 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 inconsequential 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.<sup>2</sup> 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 (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

<sup>2</sup> It 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.

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 Sect. 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.

Section 4, ‘Conclusions’, recapitulates the main findings of the paper and introduces a possibility of an alternative election method. This method aims at an improvement of policy representation of a parliament and it is discussed in the accompanying paper (Tangian 2016).

The “Appendix” (Sect. 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; for explanations of the party positions see Tangian (2013b). 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, 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.<sup>3</sup> 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 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 Fig. 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.

<sup>3</sup> Before 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               |



Table 1 continued

| Party logo  | Party description   | Number of members | Number of votes | Percentage of votes |
|---|---|-------------------|-----------------|---------------------|
|    | 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               |
|  | 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               |

**Table 1** continued

| Party logo  | Party description  | Number of members | Number of votes | Percentage of votes |
|---|--|-------------------|-----------------|---------------------|
|    | 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               |

**Table 1** continued

| Party logo | Party description   | Number of members | Number of votes | Percentage of votes |
|------------|---|-------------------|-----------------|---------------------|
|            | 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               |
|            | 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               |

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

**Table 2** Public opinion and party positions on topical policy questions. Sources: [Bundeszentrale für politische Bildung \(2014\)](#) and others, see “Appendix”.

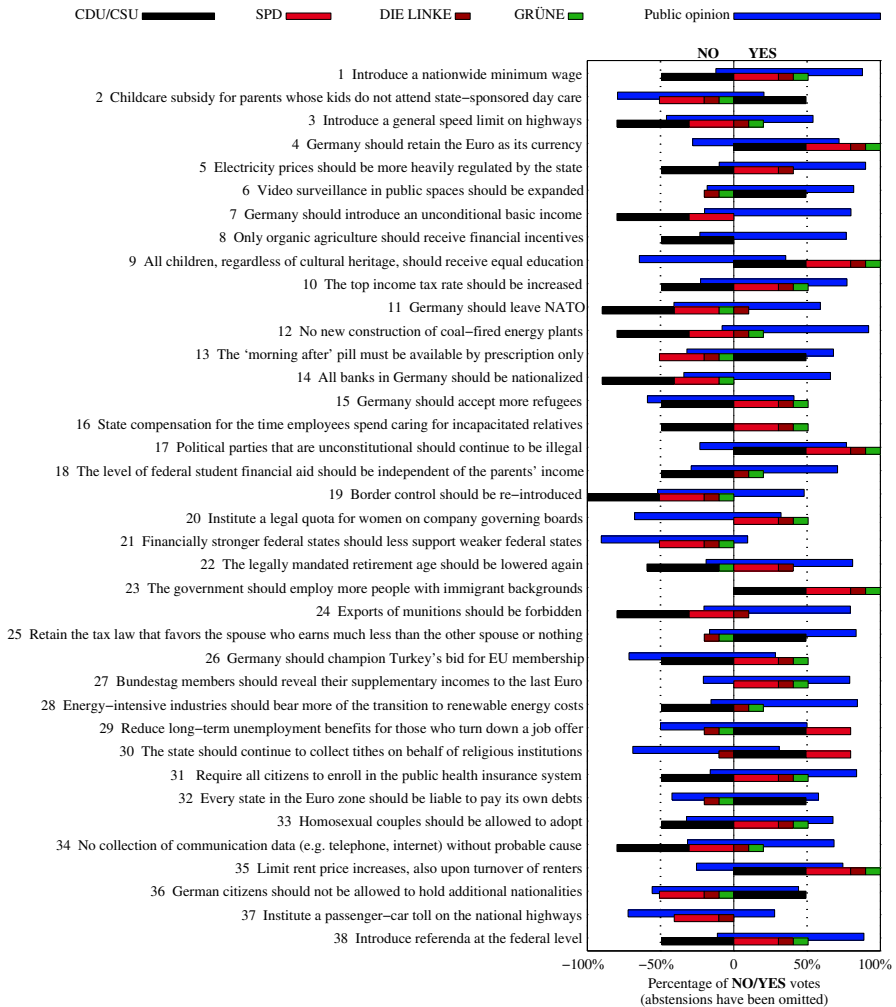
| Questions | Question weights |                              | Public opinion    |                  |
|-----------|------------------|------------------------------|-------------------|------------------|
|           | Unweighted       | Google hits in K<br>$\log_2$ | Protagonists<br>% | Antagonists<br>% |
| 1         | 1                | 10.98                        | 86                | 12               |
| 2         | 1                | 9.98                         | 20                | 77               |
| 3         | 1                | 8.70                         | 53                | 45               |
| 4         | 1                | 9.28                         | 69                | 27               |
| 5         | 1                | 9.40                         | 90                | 10               |
| 6         | 1                | 6.58                         | 81                | 18               |
| 7         | 1                | 9.48                         | 80                | 20               |
| 8         | 1                | 9.10                         | 76                | 23               |
| 9         | 1                | 5.42                         | 33                | 60               |
| 10        | 1                | 8.27                         | 75                | 22               |
| 11        | 1                | 6.98                         | 52                | 36               |
| 12        | 1                | 7.48                         | 92                | 8                |
| 13        | 1                | 6.45                         | 68                | 32               |
| 14        | 1                | 7.34                         | 60                | 31               |
| 15        | 1                | 8.75                         | 39                | 56               |
| 16        | 1                | 6.58                         | ?                 | ?                |
| 17        | 1                | 5.54                         | 73                | 22               |
| 18        | 1                | 11.01                        | 51                | 21               |
| 19        | 1                | 8.63                         | 48                | 52               |
| 20        | 1                | 10.25                        | 31                | 65               |

**Table 2** continued

| Questions | Question weights   |                  | Public opinion |             |    |
|-----------|--|------------------|----------------|-------------|----|
|           | Unweighted   | Google hits      | Protagonists   | Antagonists |    |
|           | 1  | in K<br>$\log_2$ | %              | %           |    |
| 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        | 3Limit 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

| 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 | PSC |   |
| 1         | 0   | 1   | 1         | 1     | 0   | 0   | 1       | 1   | 0            | 1                | 1   | 0   | 1          | 1               | 0  | 1               | 1       | 0                   | 1    | 1   | 1   | 1    | 1          | ?           | 1              | 1             | 1       | 1   |   |
| 2         | 1   | 0   | 0         | 0     | ?   | 0   | 0       | 1   | 0            | 0                | 1   | 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       | 1   |   |
| 4         | 1   | 1   | 1         | 1     | 1   | 0   | 1       | 0   | 1            | 1                | 1   | 0   | 1          | 0               | 0  | 1               | 1       | 0                   | ?    | 1   | 1   | 0    | ?          | 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       | 1   |   |
| 6         | 1   | ?   | 0         | 0     | 0   | 0   | ?       | 1   | 0            | 0                | 1   | 0   | 1          | 0               | 1  | 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   | 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         | ?     | 1   | 0   | 1       | 1   | 0            | 1                | 1   | 0   | 1          | 1               | 1  | 0               | 0       | 0                   | 1    | 1   | 1   | 0    | 0          | 1           | 1              | 1             | 0       | 0   |   |
| 14        | 0   | 0   | ?         | 0     | 0   | 0   | 0       | 1   | 0            | 0                | 0   | 0   | 1          | 0               | 0  | 0               | 0       | 0                   | 0    | 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   |   |
| 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                   | ?    | 0   | ?   | ?    | 1          | ?           | 0              | 1             | 1       | 0   |   |
| 21        | ?   | 0   | 0         | 0     | 0   | 1   | ?       | ?   | ?            | 0                | ?   | 1   | 0          | ?               | 1  | ?               | 0       | 1                   | 0    | ?   | 0   | 0    | ?          | 0           | 0              | 1             | 0       | 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   | 1    | 0          | 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       | ?   | 1 |
| 34        | 0   | 0   | 1         | 1     | 1   | 1   | 1       | 1   | 0            | 1                | 1   | 1   | 1          | 1               | 1  | 1               | 1       | 1                   | 1    | 0   | 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  | 1               | 0       | 1                   | 1    | 1   | 1   | 1    | 1          | 1           | 1              | 1             | 1       | 1   |   |



**Fig. 1** Public opinion and representation thereof by the 2013 Bundestag

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:

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

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:

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

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



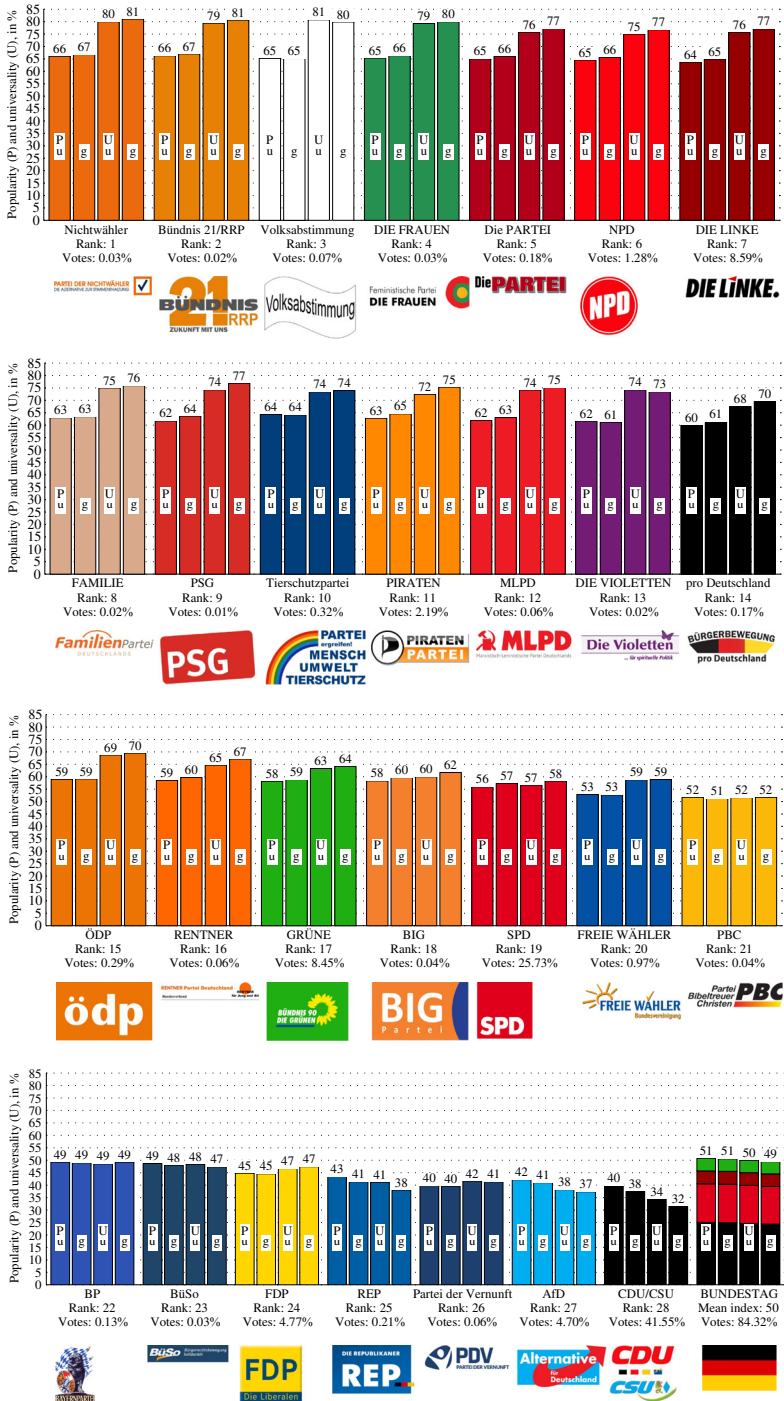


Fig. 2 Indices of German parties and the Bundestag: P popularity, U universality, u for unweighted questions, and g for questions weighted by the number of Google hits

**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  $\leq 0.01$

\*\*  $0.01 < P$  value  $\leq 0.05$

\*  $0.05 < P$  value  $\leq 0.10$

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 Fig. 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 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 Fig. 2.

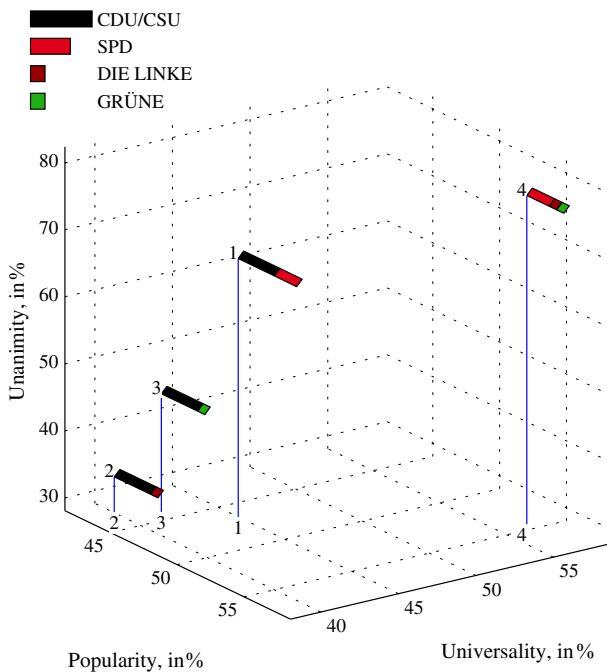
The Bundestag's policy representation is greatly influenced by the low representativeness of the CDU/CSU, making the Bundestag's indices before coalition formation as low as ca. 50%; see Fig. 2. It should be noted that the same index values would be expected if the matching of the Bundestag's position 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 Fig. 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 than necessary, because the more parties, the more complex the negotiations and the less power enjoyed by each faction; cf. with Riker's minimum

**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 seats<br>%/Rank | Unanimity<br>%/Rank | Popularity            |                              | Universality          |                              |
|-----------------------|---------------------------|---------------------|-----------------------|------------------------------|-----------------------|------------------------------|
|                       |                           |                     | Expectation<br>%/Rank | Standard deviation<br>%/Rank | Expectation<br>%/Rank | Standard deviation<br>%/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                       |



**Fig. 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

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 Fig. 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 Fig. 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  $1 - p = 1/2$ :

$$\text{Prob (Yes)} = \underbrace{p}_{1/2} \times \underbrace{3/4}_{\substack{\text{Size influence} \\ \text{of Yes-faction}}} + \underbrace{(1-p)}_{1/2} \times \underbrace{1/2}_{\substack{\text{No influence} \\ \text{of size}}} = 5/8$$

$$\text{Prob (No)} = \underbrace{p}_{1/2} \times \underbrace{1/4}_{\substack{\text{Size influence} \\ \text{of No-faction}}} + \underbrace{(1-p)}_{1/2} \times \underbrace{1/2}_{\substack{\text{No influence} \\ \text{of size}}} = 3/8.$$

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 repre-

senting 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

*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.

Alternative election methods to the one employed in the 2013 election to Bundestag are possible. In particular, we may design methods that to improve policy representation over the method discussed here. One such method that surmounts the problems revealed by our analysis is proposed in the accompanying paper (Tangian 2016). An application of this method to the 2013 Bundestag elections, produces a considerable gain in its representativeness.

**Acknowledgements** The author is most grateful to two anonymous reviewers whose detailed comments helped to improve the paper's content and style.

## 5 Appendix: References to Public Opinion Polls Relevant to the Wahl-O-Mat Questions

- 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](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](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  
Survey question: Was halten Sie von einem bedingungslosen Grundeinkommen für alle Bürger? (Mingle, 9–13 Feb 2012, 1037 interviews; pros 80 %, cons 20 %). [http://mingle-trend.respondi.com/de/13\\_02\\_2012/80-der-deutschen-wollen-das-bedingungslose-grundeinkommen/](http://mingle-trend.respondi.com/de/13_02_2012/80-der-deutschen-wollen-das-bedingungslose-grundeinkommen/). Cited 4 Oct 2013

- 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/Publicationen-PDF/European\\_opinion\\_on\\_the\\_use\\_of\\_public\\_money\\_in\\_the\\_agricultural\\_sector.pdf](http://www.wwf.de/fileadmin/fm-wwf/Publicationen-PDF/European_opinion_on_the_use_of_public_money_in_the_agricultural_sector.pdf). Cited 04 Oct 2013
- 9 Separate school education. All children, regardless of cultural heritage, should receive communal education  
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
- 13 'Morning after' pill. The 'morning after' pill must be available by prescription only  
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
- 16 Compensation for care time. State compensation for the time employees spend caring for incapacitated relatives  
No available data on public opinion. For the most relevant available data see: Stiftung Zentrum für Qualität in der Pflege (20 May 2010) *Repräsentative Umfrage zur Familien-Pflegezeit: Sechs Monate sind zu kurz—Bundesbürger nehmen Staat und Arbeitgeber auch finanziell in die Pflicht (May 2010)*. <http://www.presseportal.de/pm/80067/1617054/repraesentative-umfrage-zur-familien-pflegezeit-sechs-monate-sind-zu-kurz-bundesbuenger-nehmen>. See also <http://www.zqp.de/upload/content.000/id00046/attachment01.pdf>. Cited 6 Oct 2013.
- 17 Party prohibition. Political parties that are unconstitutional should continue to be illegal  
ARD DeutschlandTREND December 2012. *Klare Mehrheit für NPD-Verbot*, p. 16 (Infratest, 3–4 Dec 2012, 1001 interviews; pros 73 %, cons 22 %). [http://www.infratest-dimap.de/uploads/media/dt1212\\_bericht.pdf](http://www.infratest-dimap.de/uploads/media/dt1212_bericht.pdf). Cited 4 Oct 2013
- 18 State subsidies to students. The level of federal student financial aid should be independent of the parents' income  
Online survey 'Wie gerecht ist BAFöG?' (106 answers; pros 51 %, cons 22 %). <http://www.unicum.de/forum/foerderungen-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-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](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 Kirchsteuer 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.unsererirche.de/gesellschaft/aktuell/mehrheit-ht-kirchensteuer-fr-nicht-mehr-zeitgem\\_7637.html](http://www.unsererirche.de/gesellschaft/aktuell/mehrheit-ht-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  
 data: statista (2013) *Adoption von Kindern durch homosexuelle Paare. Sollen 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
- 38 Referenda. Introduce referenda at the federal level  
 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.volkentscheid.de/9876.html>. Cited 4 Oct 2013

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