

Voter expectations of government formation in coalition systems: The importance of the information context

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Abstract. Can voters in multi-party systems predict which coalition will form the government with any degree of accuracy? To date, studies which explore voter expectations of coalition formation have emphasized individual level attributes, such as education, but the complexity of the environment at the time the coalitions are forming should also be consequential in enabling (or handicapping) voters in forming expectations. We examine the relative effects of individual level attributes (e.g., education, cognitive mobilization) versus contextual factors (e.g., information availability) in 19 German state elections and 3 German general elections between 2009 and 2017. We find that the ease of identifiability of alternative future governments varies significantly across multi-party systems. We find that respondents are more likely to predict governments that they would like to see in office, that have a higher probability of receiving a majority of seats, and that consist of ideologically proximate parties. Combining survey data with a novel indicator of coalition signals, measured through a quantitative text analysis of newspaper coverage, we also find that voters consider positive pre-election coalition signals when predicting the government. Finally, we find that the information environment is much more relevant for correct coalition predictions than individual-level characteristics of respondents. Although individual attributes do influence predictive ability, these factors are strongly dominated by the context in which the prediction is taking place. The information environment has by far the largest effect on predicting coalition outcomes. Our results have implications for the literature on strategic voting in multi-party settings, as well as the literature on accountability.

Keywords: electoral expectations; coalitions; coalition signals; strategic voting

Introduction

Are voters in multi-party systems good at predicting which coalition will form the government post-election? What factors help improve – or blunt – their accuracy? Representative democracy rests on the assumption that voters will have some sense of which government will form or, at a minimum, what the most likely alternatives are (Blais et al. 2006; Golder 2005; Powell 2000; Armstrong & Duch 2010). Since voters' expectations influence their vote choice, the question about predictive accuracy is of relevance to strategic voting in multi-party systems (there is a sizable literature on strategic voting – see, e.g., Aldrich et al. 2018; Gschwend & Meffert 2017; Irwin & Van Holsteyn 2012 for recent reviews). It is also of relevance to citizens who have an interest in knowing what policy outcomes will be pursued after the election (Armstrong & Duch 2010: 309). It is helpful, especially if strategic voting is a possibility, for voters to develop accurate expectations over what government will form (Meffert & Gschwend 2010, 2011; Meffert et al. 2011).

In coalition systems, forming expectations over who will be in government is more difficult for voters than in two-party contests. To date, studies of voters' coalition expectations have tended to emphasize individual voter level attributes and cognitive resources such as education or interest

in politics (see, e.g., Rasmussen & Nørgaard 2018; Meffert & Gschwend 2010, 2011; Meffert et al. 2011). Although individual attributes are undoubtedly important, in this paper we argue that it is also the case that contextual factors, such as the availability of information, are likely to play a role. There are reasons to think that elements of the situation at the time the coalitions are forming should also be consequential. Put simply, in some situations it is easier for voters to form accurate expectations than under other circumstances. In situations where there is lot of information about the coalition actors, or where there are relatively few actors with stable vote shares, we might expect that observers would find it relatively easy to make correct predictions. But there are also contexts where there is less information (e.g., about party intentions or polling performance) or where the party actors are changing (e.g., where aggregate vote shares are volatile – perhaps because of the entry of a new party).

When it comes to forming accurate expectations about which coalition government will form then one question becomes not whether these situational factors have an effect but whether they or individual level cognitive attributes (education, interest, etc.) are ones that mostly shape the accuracy of voter expectations.

Our argument is that there are contextual or situational factors which dominate the formation of expectations: some coalitions are formed in situations where voters find it much easier to form accurate predictions than others, regardless of the individual's cognitive resources. There are times when the information environment is simply too sparse or too changeable for individuals to be able to make accurate predictions. On the other hand, there are times of stability and high information where it becomes much easier for voters to make accurate predictions.

The following study identifies what those situational factors are, and the extent to which they impact the expectations of voters relative to individual level attributes. We exploit the institutional similarity across the German states (Snyder 2001; Bowler et al. 2016; Hobolt & Hoerner 2020) to examine voter accuracy in coalition predictions across a range of coalition situations. Comparison across national elections will, necessarily, involve comparison across more than simply coalitional politics but will also involve comparison across institutional and cultural contexts. For instance, there will be variation in the electoral system used which will, in turn, affect the overall degree of proportionality, the presence or absence of legal thresholds varies by country and the party systems themselves will differ substantially (e.g., in terms of the number and size of electoral competitors or the presence of uncoalitionable parties). Additionally, countries will vary in terms of their economic development, democratic stability and average educational attainment. A sub-national research design allows us to hold constant these potentially confounding factors and, at the same time, increase both the number of cases and variation in coalitional context (see, e.g., Bowler et al. 2016; Snyder 2001). We therefore analyse representative surveys conducted in 19 state elections and 3 general elections in Germany between 2009 and 2017. We combine these surveys with pre-electoral coalition signals in the media and aggregated pre-election opinion polls, which allows us to examine the information environment facing voters across a range of circumstances.

Our study draws two broad conclusions. First, many voters are able to make successful predictions. For example, arithmetically impossible coalitions or coalitions of ideologically distant parties are much less likely to be chosen as the predicted government. Second, the main drivers of the accuracy of voter predictions are indeed situational rather than individual level attributes. There are simply some settings in which voters find it easier to form expectations than others. The availability of opinion poll information, for example, helps voters to predict which government will form. Coalition signals by political parties also provide information that voters use in sensible

and straightforward ways, in line with the kinds of ways we see in Fortunato et al. (2016). These points hold despite strong and robust evidence of ‘wishful thinking’ on the part of individual voters when predicting which government will form. Second, the analysis of 22 elections enables us to disentangle the importance of the information environment and individual-level attributes. We find strong and robust evidence that the information environment, for instance election-specific aspects, the probability of a parliamentary majority, pre-electoral coalition signals and electoral volatility, increases the probability that a respondent predicts the correct government, whereas individual-level attributes do not have a significant or substantive influence on correct government prediction. Our findings have important implications for assumptions of strategic voting in multi-party settings and, more generally, for the literature on democratic accountability.

Voting in multi-party systems: How do voters predict who will be in government?

Compared to two party systems, multi-party government presents challenges for voters, and models of voting. One line of research relates to the question of who should be held responsible for government policy (see, e.g., Fisher & Hobolt 2010; Powell 2000). A related line of research concerns the question of whether voters have the capacity to cast a ballot for a preferred policy outcome, even if that means not voting for their most preferred party (e.g., Kedar 2005; Bargsted & Kedar 2009).

Voters may want to hold an outgoing political party to account by punishing them at the polls, but if they do not know whether or not that party is part of a likely future government the voter may end up voting for one of their likely coalition partners, thereby rewarding them indirectly (e.g., Fisher & Hobolt 2010). As Blais et al. (2006) note:

“To vote rationally, the voter needs to determine what coalitions are possible, ascertain their probability and anticipate the policy compromises that will be made in each case” (692).

Within this literature, it is often anticipated that voters will be able to form accurate expectations about which government will form. For example, voters need to need to have a sense of likely government formation in order to vote strategically in coalition settings (Armstrong & Duch 2010; Bowler et al. 2010; Debus & Müller 2013, 2014; Lago 2008; Meffert & Gschwend 2010, 2011; Meffert et al. 2011). For a given expectation of which coalition is likely to form, voters may shift their votes in order to help that coalition win, or to move the median policy position of the coalition (Bargsted & Kedar 2009; Duch et al. 2010; Indridason 2011b; Meffert et al. 2011). In the Israeli election in 2003, for example, it was found that: ‘voters’ views about the coalitions that could be formed after the election had an independent effect on vote choice, over and above their views about the parties, the leaders and their ideological orientations’ (Blais et al. 2006: 691). So, some evidence suggests that expectations inform voter behaviour. But the evidence on expectations is often drawn from settings in which the context is fixed, that is, a single national election where there is a great deal of information and the coalition context is well-known and well-publicized. In such settings, most models of voter decision making and strategic choice understandably emphasize individual level attributes, such as education, as factors which help voters form accurate expectations (e.g., Meffert et al. 2011; Irwin & Van Holsteyn 2012; Meffert & Gschwend 2010, 2011).

A focus on individual level attributes necessarily downplays attributes of the context which will make it easier (or harder) for voters to make accurate predictions. It may be that the capacity

of voters to develop expectations and vote strategically does not depend solely upon cognitive attributes of the voter herself but also depends upon the context in which the voter is located: some settings facilitate expectations more readily than others (see, e.g., Lago 2008; Armstrong & Duch 2010; Fortunato et al. 2016; Debus & Müller 2014).

But if we are to emphasize the role of context, what kinds of contextual factors will make it easier or harder for voters – regardless of individual cognitive attributes – to make accurate predictions? We focus on two broad categories of the information environment in a given coalitional setting: the amount of information available to voters and the stability of the political situation. Voters need information in order to be able to form reasonable expectations, where information exists, for example, through polling and/or through such devices as pre-election coalition signals, voters will respond and, consequently, make more accurate predictions. But some coalition situations are more volatile than others: vote shares of parties may change during an election and, in consequence, will change coalition possibilities. In such volatile settings, all voters will have a harder time forming accurate expectations. In brief, we would expect voters to do better predicting coalition outcomes in situations where information is plentiful and vote shares stable. Voters will do worse where information is sparse and vote shares are unstable. Our expectation is that these situations will make it easier (or harder) for all voters to develop accurate expectations, which means that these kinds of situations will have bigger consequences for levels of accuracy than will individual voter attributes.

We can turn these broad expectations into more specific hypotheses that provide an account of the relationship between context – the coalition bargaining situation in front of voters – and the capacity of voters to make accurate predictions. Even with our emphasis on context, the natural starting point, as it is with most models of voter choice, lies in the properties of individual voters themselves. Individual level factors which shape expectations are also the most straightforward to develop since we would expect cognitive resources at the level of the individual to be key in helping voters form expectations. We know, from the careful work of scholars such as Meffert, Gschwend, Debus, Müller and others, that individual levels of interest, knowledge and education will be important in shaping expectations in straightforward ways: that is, the more interested and knowledgeable the voter the more accurate the expectations (Meffert & Gschwend 2010, 2011; Meffert et al. 2011). Meffert et al. (2011) provide a good basis from which to begin since they develop a series of sensible hypotheses relating to expectation formation at the individual level. The insights provided by these individual level models will therefore form our baseline model of expectations. H0 is that accurate coalition expectations will be related to individual measures of cognition and information processing. We would expect, for example, factors such as a high level of interest in the election, high levels of education and age, the latter a measure of experience with the system, help voters form accurate expectations.

But, we argue, these individual level attributes are not always sufficient in helping voters form *accurate* expectations. Even highly educated, politically interested older voters will struggle in certain contexts. We argue that information about the coalition situation – the context in which the coalition is forming – allows voters to make better predictions. At election time, there is often some polling evidence or some examples of news coverage that will help shape voter expectations (Stoetzer & Orłowski 2020). In national elections, of course, this kind of information is plentiful but is much less plentiful in sub-national elections and so we can expect to see a wide variation in the amount of information available to voters from state to state. Nevertheless, when such information is available, we would expect voters to respond if they think a party has a high

probability of gaining a majority of seats in the upcoming election; respondents should be more likely to predict this coalition.

H1 (Probability of a majority/public support): Coalitions are seen as being more likely to form if the coalition option has a high probability of gaining a majority of seats, as revealed in pre-election polls.

But polling information is only part of the relevant informational context that will help shape which government will form. Often the government is formed only after extensive discussion between parties. As Golder (2005) notes: ‘As a result, the lines of accountability are blurred and it is unclear how well voter preferences are reflected in the government that is ultimately formed’ (646). Pre-electoral coalition agreements represent a response to this situation by identifying government alternatives and allowing the electorate to register support for them and, as a result, ‘electoral coalitions may increase democratic transparency and provide coalition governments with increased legitimacy and stronger policy mandates’ (Golder 2006: 194). In part because of this usefulness, pre-election coalitions are quite common. Golder notes that in 292 elections, 44 per cent had at least one pre-electoral coalition (Golder 2006: 194; see also Ibenskas 2016; Gschwend et al. 2017). Of course, for pre-electoral coalition agreements to work in this way, voters need to realize that these agreements are in place. The degree to which voters are aware, and act upon, pre-election agreements is thus important to those questions. If there are pre-election coalition agreements or coalition signals (Golder 2006; Gschwend et al. 2017), we would expect to see greater certainty among voters about that particular coalition forming – conditional on election results. Thus, if the media report more often about the likelihood of two or more parties forming a coalition post-election or signalling the willingness to cooperate, we expect that voters react to this and incorporate pre-electoral coalition signals into their government predictions.

H2 (Pre-electoral coalition signals): Coalitions are seen as being more likely to form if media coverage signals cooperation between parties.

Other factors that affect the likelihood of a given coalition forming will relate to interactions between the parties within potential coalitions and the likelihood of being able to come to an agreement. Within the coalitions literature a standard expectation is that parties ideologically closer to each other will be more likely to form a coalition than ones which are ideologically distant (see, e.g., Martin & Vanberg 2003; Debus 2009; Debus & Müller 2014; Indridason 2011a; Bowler et al. 2020). We expect voters in coalition systems to see things in a similar way.

H3 (Ideological distance): Coalitions are seen as being more likely to form if the parties are ideologically close to each other.

Until this point, our hypotheses have stressed the ways in which the information environment may assist or hinder voter attempts to form expectations. But there are also ways in which real-world voters do not always seamlessly update expectations. Along with Meffert et al. (2011), therefore, we would also expect those voters who have more intense party preferences to be more willing to engage in ‘wishful thinking’ and be less open to the influence of polling and other sources of information. Consequently, wishful thinkers are less likely to form accurate expectations. A respondent who has one desired government might select this government as the predicted coalition. Yet, this coalition is less likely to form, as some of the ‘wishful thinkers’ might not be rational in their prediction (Searles et al. 2018).

H4 (Wishful thinking): A respondent's desired government has a higher probability of being identified as the predicted coalition.

Finally, political parties are the building blocks of coalitions and the party system provides the collection of building blocks from which coalitions are chosen. As Debus and Müller (2014) point out, in some circumstances, voters learn what coalitions may form because those coalitions have formed frequently in the past. A party system that is changing will upset such learning. New party entrants, for example, will introduce new coalition possibilities and necessarily take votes away from existing parties. Changing party systems allow for less 'coherent voter preferences and [less] predictable electoral alignments' (Tavits 2008: 549).

A straightforward expectation, thus, is that voters should have an easier time choosing who will be the government when the party system is stable than when it is changing and new parties are entering the legislature.

H5 (Volatility): Voters are more likely to make accurate predictions when the party system is stable and less likely to make accurate predictions when the party system is volatile.

Taking these hypotheses together they make the case that voters will have an easier time forming accurate expectations when information is plentiful (through polls or coalition signals) and party vote shares are relatively stable. The literature to date has emphasized individual level factors and so the default expectation will be that – in any comparison of effects between individual and contextual factors – it will be the former which will weigh more heavily. Yet, as we have argued, there are some contexts in which individuals may find it hard to develop expectations and contexts in which many will find it easier. We expect that the effects of context will be at least as consequential as individual level attributes.

Data and measurement

Data

To date, most of the evidence which speaks to the question of voter expectations and strategic voting in coalition systems has emphasized the role of individual level attributes, in part because of limited variation in coalition negotiation situations. A national election, for example, will present the same case to all respondents. We therefore analyse 19 surveys conducted prior to Land elections between 2010 and 2017, as part of the German Longitudinal Election Study, to allow us to compare across coalition situations.¹ To compare how coalition predictions in lower information environments differ from information rich first-order elections, we contrast the findings with coalition predictions prior to the 2009, 2013 and 2017 German federal elections.

Table 1 provides an overview of the data used in this paper, displaying the number of respondents who made a coalition prediction, the number of polls used for simulating election results and the number of coalition options to be evaluated, in terms of their likelihood of becoming the government after the election. The federal pre-election studies consist of around 2,000 respondents, each of whom completed a computer-assisted personal interview. For the subnational elections, we have between 429 and 579 respondents who predicted a government.

Table 1. Elections included in the analysis

Year	Election	Respondents	Missing prediction	Missing prediction (%)	Government options	Polls
2009	Federal Election	2,173	508	23.4	8	52
2010	North Rhine-Westphalia	572	34	5.9	10	18
2011	Baden-Württemberg	562	44	7.8	10	20
2011	Berlin	615	30	4.9	10	24
2011	Mecklenburg-Western Pomerania	562	38	6.8	10	8
2011	Rhineland-Palatinate	565	34	6	10	14
2011	Saxony-Anhalt	580	41	7.1	10	3
2012	North Rhine-Westphalia	506	47	9.3	5	19
2012	Schleswig-Holstein	661	82	12.4	5	9
2013	Bavaria	532	15	2.8	10	12
2013	Federal Election	2,003	111	5.5	6	51
2013	Hesse	529	24	4.5	7	6
2013	Lower Saxony	543	94	17.3	5	14
2014	Brandenburg	507	10	2	8	6
2014	Saxony	503	12	2.4	10	10
2014	Thüringen	504	11	2.2	8	2
2016	Baden-Württemberg	512	9	1.8	8	15
2016	Mecklenburg-Western Pomerania	500	4	0.8	9	6
2016	Rhineland-Palatinate	512	15	2.9	8	12
2017	Federal Election	2,179	261	12	8	51
2017	North Rhine-Westphalia	521	4	0.8	8	14
2017	Schleswig-Holstein	512	8	1.6	8	5

Note: ‘Respondents’ refer to the total number of respondents per election study, ‘Do not know/No answer’ lists the number of respondents who did not make a government prediction, ‘No prediction (%)’ calculates the percentage of respondents without a valid coalition prediction, ‘Government options’ counts the maximum number of governments to be evaluated by respondents (i.e., the ‘choice set’ for the conditional logistic regressions), and ‘Polls’ lists the number of opinion polls used to simulate seat shares and the effective number of parties.

Dependent variable

Our dependent variable is *Predicted Government*. Across all elections only one single-party government (CSU in Bavaria 2013) was formed. Therefore, we use the terms coalitions and governments interchangeably, although single-party governments are theoretically possible.

The question wording of the items about predicted governments varies across surveys. Three state election surveys and the 2017 federal election study employ an open format (‘Which party or parties will form the government?’), four surveys use a closed format that lists potential governments and voters can select one or more of these as their predicted government.² The remaining election studies use a continuous item instrument that asks respondents to estimate the probability (rescaled from 0 to 10) that each of the coalition possibilities will be in government

after the election. Importantly, for the second and third question format, respondents may have multiple predicted governments and we allow for this in the main models. If a respondent ranks the probability for one particular coalition as higher than all other potential governments, this respondent has expressed one preferred government. Another potential issue with the continuous coalition format relates to the observation that many respondents assigned the same probability of governing after an election to two or more coalitions. We take these differences into consideration by using three specifications of the dependent variable (1: selecting only respondents with one predicted coalition; 2: for respondents with more than one prediction, randomly sampling one of the options; 3: including respondents with more than one prediction multiple times in the regression models). As we show in Figure 2, the predictions, understandably, become less accurate when we allow for more than one prediction. We use the binary measure *Correct Prediction* to test the accuracy of coalition predictions. The variable indicates whether or not a respondent's predicted government was formed after the election.

Independent variables

Coalition signals in newspapers. Turning to the measurement of the four key independent variables, one of the main factors of interest is the way in which parties may signal their intentions to each other and, hence, to voters. *Coalition Signals in Newspapers* is a variable that counts the number of times each coalition option has been mentioned in German print and online newspapers in the 2 years prior to an election. We use the time-window of 2 years prior an election for two reasons. First, parties indicate cooperation throughout the entire legislative cycle, not only immediately prior to elections. Moreover, longer time-spans allow for mentions in newspapers, especially for smaller German states that do not receive much coverage. This should result in more precise estimates. We use all German online and print newspaper articles available on LexisNexis, resulting in a text corpus of over 15,980 articles that mention at least two parties and a term indicating a coalition or cooperation. Each newspaper article is classified either as news about the federal level or one of the 16 states using the semi-supervised geographical news classifier *Newsmap* (Watanabe 2018) in combination with the *quanteda* R package (Benoit et al. 2018). We apply dictionaries to all 760,000 sentences and check whether the sentence indicates the willingness of two parties to govern together or cooperate. In over 19,800 sentences, the dictionary-based approach detected at least two parties or the name of a coalition and a word indicating cooperation. A higher aggregated value implies that the media portrayed this party combination as potential coalition partners. To make the measure comparable across elections, we rescale the variable to a 0–100 scale for each election. A value of 0 means that potential coalition partners have not been mentioned at all in the 2 years prior to an election; a value of 100 implies that all mentions were devoted to the same government option. The classification process is described extensively in Section B in the Supporting Information.

Validation is crucial when conducting quantitative text analysis. To test whether the measure derived from the quantitative analysis of texts provides meaningful estimates of coalition signals, we compare our measure to an existing classification of pre-electoral coalitions. Best (2015) hand-coded the signals for all coalitions in German state elections between 1990 and 2012. Overall, 58 election–coalition options are part of our survey data and also included in Best (2015). We match the human classification with our continuous measure and run a linear regression with

Table 2. Validating the text-based measure of coalition signals in newspapers

	Model 1
Coalition signal: Negative coalition signal	6.03 (3.63)
Coalition signal: Neutral coalition signal	7.34 (3.14)*
Coalition signal: Alternative pre-electoral coalition	16.49 (5.74)**
Coalition signal: Desired pre-electoral coalition	21.77 (3.41)***
R ²	0.51
Adjusted R ²	0.48
Number of observations	58

***p < 0.001

**p < 0.01

*p < 0.05.

our *Coalition Signals in Newspapers* as the dependent variable. The manually coded classes (negative signal, neutral, alternative pre-electoral coalition, desired pre-electoral coalition) serve as the independent variables.

The regression in Table 2 shows that *Negative* coalition signals have the lowest value, followed by *Neutral* and *Alternative* coalitions. *Desired pre-electoral coalitions*, as coded by Best, have by far the largest explanatory effect, indicating that our newspaper-based measure of positive coalition signals is a good proxy. The order of coalitions, as well as the significant differences, exactly mirror our prior expectations. Moreover, even though the sample consists of only 58 coalition options, the dependent variable's variance explained through the manually coded coalitions (R²) amounts to 0.51. This good model fit and the close correspondence of the automated coding and the qualitative human assessment of the same coalitions gives us confidence in the validity of our novel measure of coalition signals. Admittedly, this measure merely serves as a proxy for pre-electoral coalition signals instead of providing a classification of coalition signals. However, our approach points to the usefulness and potential of classifying coalition signals from political text or newspapers.

Probability of a majority. A second factor of interest to our argument is the way in which voters may respond to polling information. Here our focus on sub-national politics provides an advantage because of the considerable variation in the availability of polling information across states. The measure *Probability of a Majority* is based on the aggregation of pre-election polls published for the respective Land election, using the simulation method recently introduced by Bender and Bauer (2018). We use 184 state election polls conducted in the year prior to the start date of each survey, and 154 polls published in the last 6 months prior to the federal elections. On average, we have around 10 opinion polls per state election and 50 per federal election.³ Using the party-level survey results, we pool all the relevant surveys and apply the algorithm by Bender and Bauer (2018) to estimates of seat shares for each party.⁴ These seat shares are then used to calculate the Bayesian posterior probabilities that a given coalition obtains a majority of seats. For more detailed information on the simulations, see Section A in the Supporting Information.⁵ This approach allows us to have an estimate of how election polls signal the probability that a coalition will be formed based on the information that voters have prior to casting their ballot. We view these probabilities as important information that will affect voters' predictions.

Perceived distance between parties. We measure the ideological composition of a potential government as the absolute *Perceived Distance Between Parties* between the two most extreme coalition parties, calculated separately for each election and respondent. For single-party government options, we assign a value of 0, as there is no ideological distance between parties (assuming that parties are unified actors). If a respondent does not evaluate the left–right positions of one of the parties or coalitions, we use the average ideological distance based on all respondents in the respective election that evaluated the coalition option. In Section H in the Supporting Information, as a robustness check, we also test an alternate measure of this variable, based on Wordscores positions (Bräuninger et al. 2020). The results remain unchanged.

Desired government. Our final key independent variable, *Desired Government*, captures ‘wishful thinking’. This is a measure which helps to assess how resistant voters are to the kinds of information we have discussed so far. The hypotheses we have advanced so far emphasize the way in which voters may be able to update expectations. But some voters may not be open to updating and instead see what they wish to see. Hence, the inclusion of a wishful thinking measure. If the predicted government equals the desired government, we assign a value of 1, and 0 for the coalitions that are not desired. As an alternative measure we calculate the absolute difference between the left–right position of a coalition, measured through the average placement of the parties on a left–right scale (aggregated across all respondents in a survey) and the respondent’s left–right self-placement (*Ideological Distance Government and Respondent*). If the ‘wishful thinking’ effect holds, a respondent should be more likely to predict a government that is proximate to her own left–right position.

Incumbent Government is included as a contextual control variable and indicates whether a coalition option is the incumbent government at the time when the survey was conducted. This variable also captures, in part, voters’ proclivity to learn from coalition patterns (Debus & Müller 2014) and predict outcomes based on the information that is most accessible to them (Zaller 1992).

Modelling strategy

We employ a conditional logit regression approach to model coalition selection opportunities (McFadden 1974). Conditional logit models have been used widely in predicting government formation or coalition expectations (e.g., Martin & Stevenson 2001, 2010; Gross & Debus 2018). Each government mentioned by at least one respondent in an election is part of a ‘choice set’ which comprises the government to be formed after the election. The government(s) predicted by a respondent receive(s) a score of 1, while a value of 0 is assigned to all other coalition options. The conditional logit approach allows us to take into consideration differences between the choice set on the level of respondents and government options. Note that the choice set varies for each election. For instance, some surveys did not ask whether a particular single-party government or an unusual three-party government would be formed. The choice set for the elections ranges from 5 to 10 government options depending on the pre-election survey.

For the analysis of correct predictions and missing predictions, we run multilevel logistic regressions with random effects for each election and the type of question about the coalition prediction. Moreover, we run random forest algorithms (Breiman 2001; Liaw & Wiener 2002) to assess the importance of the information environment and individual-level attributes for the correct prediction of the coalition.

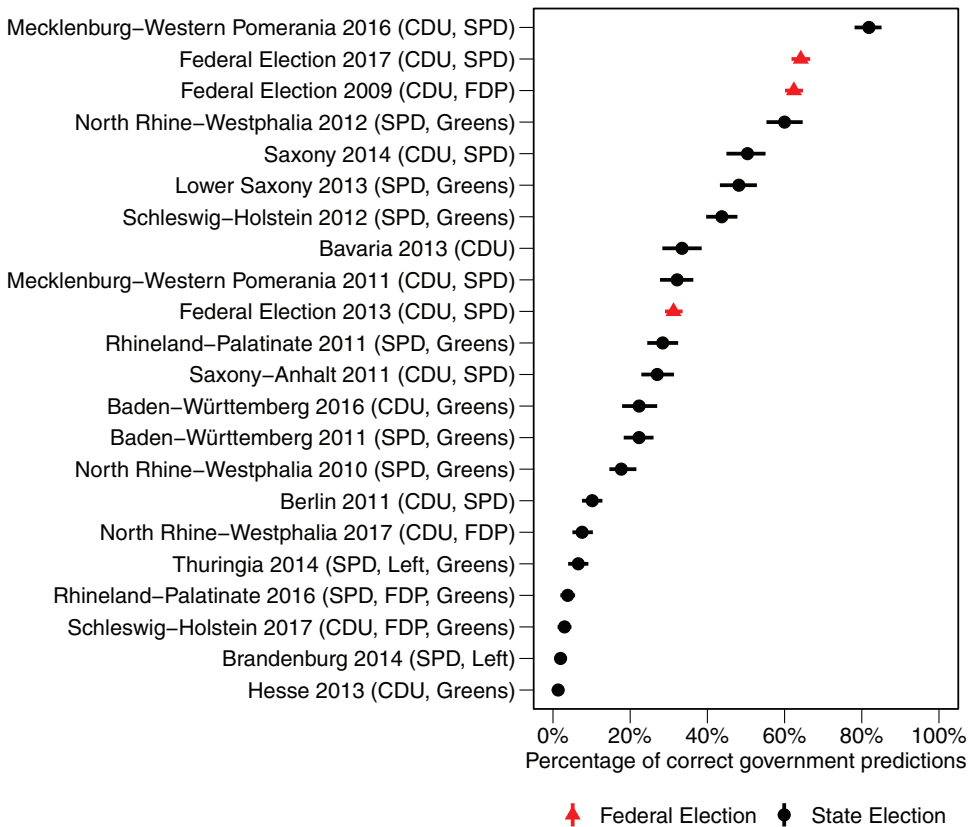


Figure 1. Percentage of correct coalition predictions in each election. The horizontal bars show 95 per cent bootstrapped confidence intervals based on 1,000 resamples with replacement. [Colour figure can be viewed at wileyonlinelibrary.com]

Results

We divide the ‘Results’ section into three parts. First, we provide descriptive evidence about variation in coalition predictions in the German states and on the federal level and list the most frequently predicted coalitions for each election. Second, we estimate which of the factors, that vary across the choice set, is more likely to make a respondent predict that a particular government will be formed. Third, we analyse which voters are more likely to predict the government formed after an election, and compare individual-level characteristics to contextual factors of the election.

How often do voters get it right? Descriptive evidence

First, we investigate how often voters predict the correct government. Figure 1 displays the accuracy of coalition expectations across the surveys in our sample, that is, the proportion of respondents whose predicted government also was the government formed after the election. As can be seen, there is wide variation in voter accuracy across the states, with almost 80 per cent of respondents correctly predicting the outcome in Mecklenburg-Western Pomerania in 2016 but only 3 per cent forecasting the Brandenburg government of 2014 accurately. Average responses across

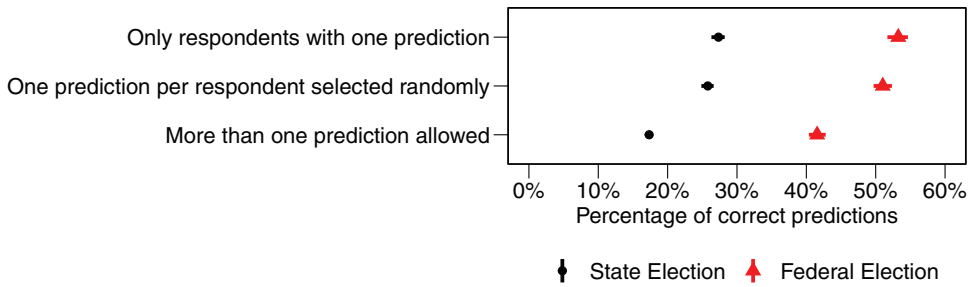


Figure 2. Percentage of correct coalition predictions, pooled across all Land elections. The horizontal bars show 95 per cent bootstrapped confidence intervals based on 1,000 resamples with replacement. [Colour figure can be viewed at wileyonlinelibrary.com]

the states, even within the same state, vary substantially. At the very least, this implies that a purely individual level model, that is, one that models expectations only as a function of voter attributes (knowledge, motivation and so on), is likely incomplete. A related point is that, for the most part, accuracy seems quite low – the samples have figures that are typically below 30 per cent.

Figure 2 displays the percentage of correct predictions, pooled for all state and federal elections. If more than one government prediction is permitted, the percentage of correct predictions lies at 17 per cent, and rises up to 28 per cent if we only consider respondents who made a single prediction. For the federal elections, we observe much higher proportions of correct predictions across all three measurements, ranging between 38 and 50 per cent. These high figures are driven by the elections in 2009 and 2017, in which more than 6 of 10 survey respondents predicted the correct coalition.

Figure 3 plots the three most frequent government predictions for each of the elections. In 36 per cent of the elections (8 of 22), the most frequently predicted coalition was also formed after the election. In 5 of 22 elections (22 per cent), the governments formed after the election was not part of the three most frequently predicted governments. In the federal elections of 2009 and 2017, the winning coalition was by far the most frequently predicted one, with differences of over 40 percentage points compared to the second most frequently predicted coalition. Overall, the descriptive statistics highlight that respondents' predictive ability is much lower for state, than for general elections. Moreover, we observe considerable differences across elections.⁶

What drives coalition predictions?

Next, we analyse which coalition of the choice set is more likely to be predicted as the government, using conditional logistic regressions. A positive (negative) coefficient indicates that a higher value of one dependent variable correlates with a higher (lower) chance of this option being selected by a respondent.⁷ First, we report results for all election surveys that contain the *Desired Government* variable. Figure 4 plots the coefficients and 95 per cent confidence intervals.⁸

The *Desired Government* variable (left-hand panel of Figure 4) is positive and statistically significant across *all* federal and state elections. The coefficients in the left-hand panel reveal that federal elections do not seem to have higher levels of wishful thinking than state elections. The main results stay the same when we use the measure of the ideological distance between the respondent and the respondents' ranking of the predicted government options as a measure

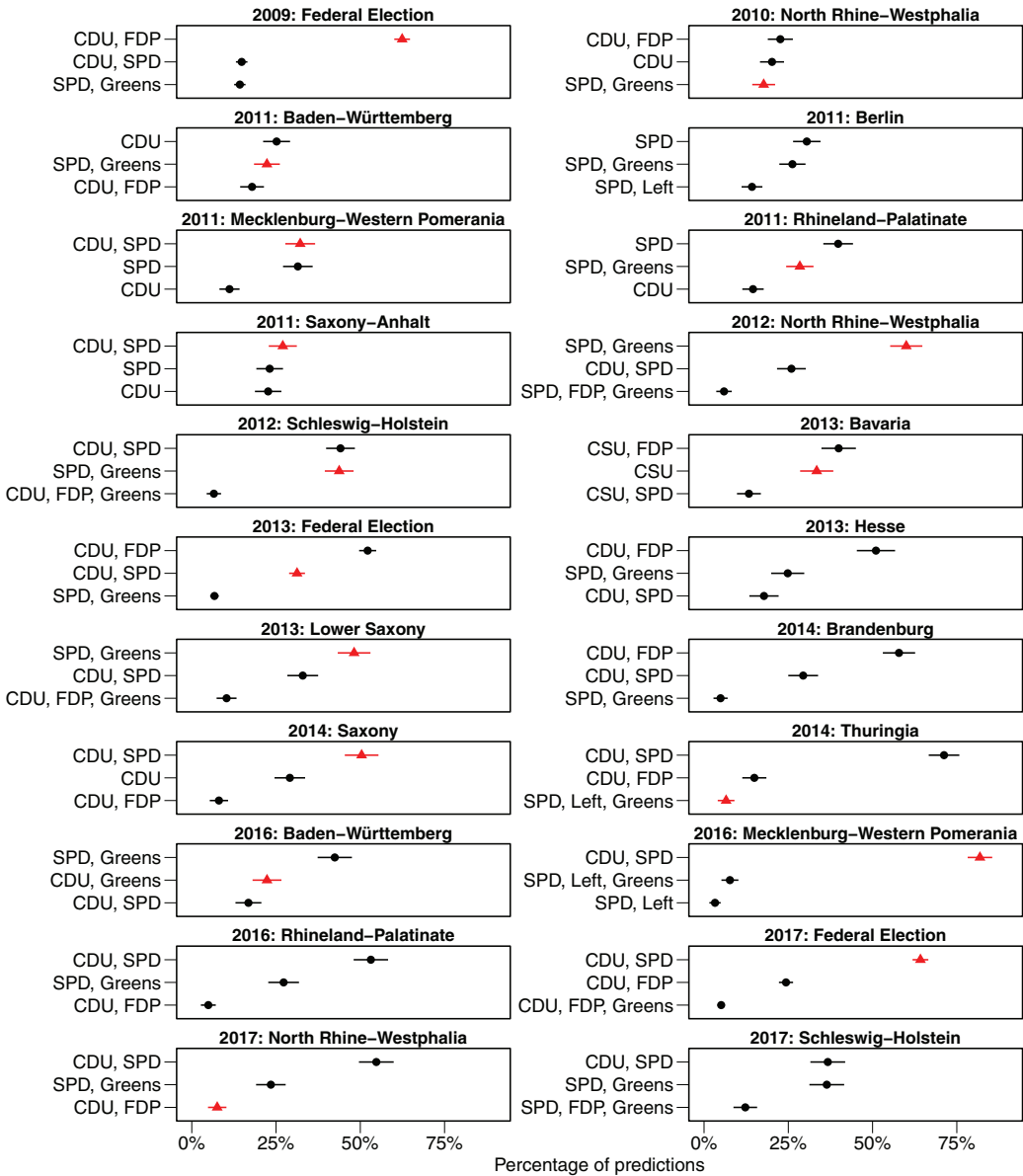


Figure 3. Proportions of the most frequently predicted governments for each election. Red triangles indicate the government formed after the election. [Colour figure can be viewed at wileyonlinelibrary.com]

of wishful thinking (Figure A5 in the Supporting Information). Using this variable, instead of the dummy measure of wishful thinking (*Desired Government*), increases the number of elections from 18 to 22.⁹ A larger distance between the respondent and the government option has the expected negative (and statistically significant) coefficient in 20 of 22 elections, offering further support for wishful thinking dynamics in coalition formation expectations. This is a pattern consistent with the findings of earlier studies that focused on the individual level drivers of voter predictions.

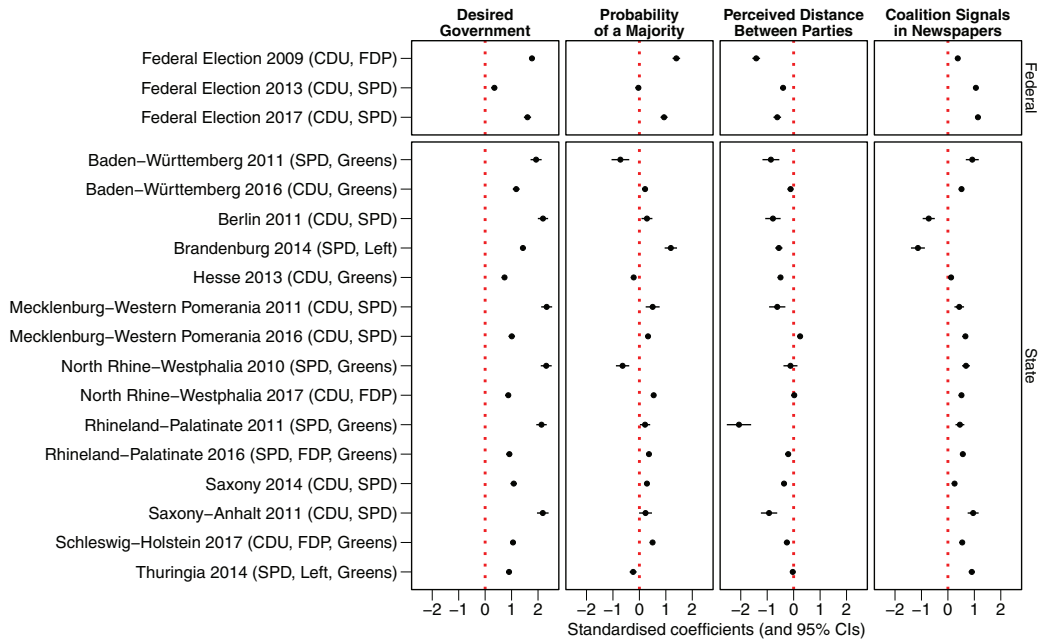


Figure 4. Predicting which government option is selected as the predicted government from the choice set of all governments. The coefficients are derived from 18 models, one for each election in the sample that includes information on the desired government. [Colour figure can be viewed at wileyonlinelibrary.com]

Note: If a confidence interval does not cross the dotted vertical lines at 0, the coefficient is statistically significant at the 95 per cent level.

Turning to the *Probability of Majority* (second panel), 10 of 18 elections show the expected positive coefficients. In those elections, respondents were more likely to predict a government with a higher probability of having a majority of seats. Looking at our measure of the perceived *Ideological Distance Between the Parties*, we observe a negative and significant effect in all but two elections (third panel). Respondents usually do not predict a government consisting of parties they perceive as ideologically distant. Finally, the *Coalition Signals in Newspapers* (right-hand panel) variable has the expected positive coefficient in all but two elections. Given that the measure of coalition signals, derived from the automated analysis of newspaper coverage, contains some noise, the significant coefficients across almost all elections can be seen as conservative estimates of the impact of pre-electoral coalition signals on coalition prediction. Overall, these results offer strong support that wishful thinking, a rational assessment of arithmetically realistic coalitions, parties’ coalition signals in the media, as well as perceived ideological distances exert an influence on coalition predictions.

The result that the probability of achieving a majority has a negative coefficient in four of the 18 elections is slightly puzzling and may point to the existence of an interaction between chance and willingness to form a coalition. That is, some of the government combinations might have a mathematical majority of seats but are very unlikely to form.¹⁰ To explore this possibility, we created a measure of the willingness to form a coalition. We count the occurrences of coalitions following all 106 land elections between 1990 and 2017 (see Section H in the Supporting Information). Coalitions that have been formed after at least five elections are coded as ‘common’

options that demonstrate that parties are willing to form a joint government on the state level. Six of our government options are coded as commonly occurring coalitions. We interact this measure with the standardised measure of probability of majority and report the coefficients for all models in Figure A7 in the Supporting Information. Unsurprisingly, previously formed coalitions on the state level are more likely to be predicted by respondents. The interaction between common coalitions and the probability of having a majority has a statistically significant negative coefficient in just one election (Saxony-Anhalt 2011), suggesting that respondents are indeed more likely to predict coalitions that have a high probability of obtaining a majority of seats *and* have been formed in the past.¹¹

Individual and context-specific explanations for accurate predictions

Meffert et al.'s (2011) study shows that various individual-level variables influence the accuracy of electoral expectations. Our harmonized dataset of election studies enables us to go beyond individual-level factors and include election-specific variables which capture the informational context facing voters. We run logistic regressions with a binary dependent variable that takes the value 1 (0) if the predicted coalition equals (does not equal) the coalition formed after an election. As noted above in our discussion of H0, we include standard *Interest in the Election* (as a continuous variable ranging from 0 to 4), *Education* (a binary variable coded 1 for Abitur or higher), *Age* (6-category variable), *Gender* and *Income* (as continuous variables ranging from 0 to 10). The contextual variables are the *Wishful Thinking* dummy, the *Probability of a Majority* for the predicted coalition, whether the selected option was the *Incumbent* government, and the *Type of Election* (federal vs. state election). We also add *Pedersen's Volatility Index* (Pedersen 1979), measured using the aggregated opinion polls, to capture volatility and uncertainty prior to an election (H5 above). Higher values imply more vote switching between parties, which should decrease the accuracy of predictions. In the main analysis, we only focus on respondents who made exactly one prediction but our results remain similar when we also include the respondents who made more than one prediction although the overall accuracy of predictions decreases, suggesting that respondents who make more than one prediction might be either guessing or answering the survey item randomly.

Model 1 of Table 3 presents a baseline model that only includes measures of the individual-level characteristics of respondents. Wishful thinking (*Desired Government*) has the expected negative coefficient: respondents who select their preferred government as the coalition that will form are less likely to predict the correct coalition. We also observe that respondents with lower levels of education (i.e., *no A-Levels (Abitur)*) are less likely to make a correct prediction, and that male respondents are somewhat more likely to predict the correct coalition outcome. The coefficients for the remaining variables are small and insignificant.

Only considering contextual factors (Model 2) results in more substantive findings with better explanatory power. In general, we find that predictive accuracy in a *State Election* is substantively and significantly lower than in federal elections.¹² When a coalition option is selected that has a larger *Probability of a Majority* of seats (as forecast in opinion polls), the prediction is, not surprisingly, much more likely to be correct. On the other hand, when *Incumbent* coalitions are chosen, we observe a negative coefficient. Importantly, the goodness of fit statistics of the contextual model outperform the individual-level regression model. Combining the individual and contextual variables (Model 3) does not change most coefficients for the contextual variables, but

Table 3. Predicting correct government formation

	Model 1	Model 2	Model 3	Model 4
Desired government	-0.12* (0.05)		0.26*** (0.06)	0.18*** (0.04)
Interest in the election: Not much (ref.: no interest at all)	0.08 (0.11)		0.02 (0.13)	0.01 (0.06)
Interest in the election: Medium	0.03 (0.10)		0.04 (0.12)	0.02 (0.06)
Interest in the election: Strong	0.04 (0.11)		0.04 (0.13)	0.12 (0.07)
Interest in the election: Very strong	0.14 (0.12)		0.00 (0.14)	0.08 (0.08)
Education: No A-levels	-0.20*** (0.06)		0.11 (0.07)	0.05 (0.05)
Gender: Female	-0.11* (0.05)		-0.07 (0.06)	-0.01 (0.04)
Age: 26–35 (ref.: 18–25)	-0.32** (0.10)		-0.31* (0.12)	-0.05 (0.07)
Age: 36–45	-0.20 (0.10)		-0.15 (0.12)	-0.04 (0.07)
Age: 46–55	-0.16 (0.10)		-0.19 (0.12)	-0.04 (0.07)
Age: 56–65	-0.14 (0.10)		-0.17 (0.12)	0.01 (0.08)
Age: 66 and older	-0.14 (0.10)		-0.22 (0.13)	-0.11 (0.08)
Income	0.01 (0.02)		-0.04 (0.02)	-0.01 (0.02)
Prediction question: Coalitions – continuous (ref.: coa. – binary)	-2.53 (1.52)	-0.52 (1.87)		
Prediction question: Government parties – binary	-1.50 (1.54)	1.23 (1.87)		
Probability of a majority		4.70*** (0.10)	4.35*** (0.10)	2.69*** (0.05)
Incumbent government		-0.38*** (0.08)	-0.34*** (0.08)	0.33*** (0.05)
State election		-2.25* (1.12)	-1.70*** (0.08)	-1.07*** (0.05)
Pedersen's Volatility Index			-0.16*** (0.01)	-0.05*** (0.01)
Number of predicted coalitions by respondent				-0.04*** (0.01)

(Continued)

Table 3. (Continued)

	Model 1	Model 2	Model 3	Model 4
AIC	9,334.17	6,675.52	6,884.72	19,027.15
BIC	9,455.09	6,726.24	7,019.87	19,188.90
Log likelihood	-4,650.08	-3,330.76	-3,423.36	-9,493.57
Number of observations	9,073	10,352	9,073	24,041
Number of groups: Election	18	18		
Number of groups: Coalition prediction question			3	3

***p < 0.001

**p < 0.01

*p < 0.05.

Desired Government changes to a positive coefficient once we include *Probability of Majority* in the regression model. Models 3 and 4 remove the random effects for each election, but add the election-specific measure of volatility (*Pedersen's Volatility Index*) instead, which has the expected negative coefficient: the more uncertainty and volatility before an election – estimated through the expected changes in vote shares between parties – the less likely a respondent predicts the correct coalition.¹³ Model 4 repeats Model 3 but also includes respondents who predicted more than one government. Although it increases the number of observations, the substantive conclusions remain unchanged.

The last question relates to the relative importance of information context and respondent-level characteristics. The model fit statistics in Table 3 suggest that individual-level variables do not add much explanatory power. The AIC and BIC values are much lower in Model 2 than in Model 1. This suggests that contextual factors and variables relating to the government options have more explanatory power when it comes to correctly predicting coalition outcomes. In addition, we measure the relative importance of the explanatory variables using a random forest. Random forest algorithms estimate hundreds of classification trees to identify the variables that help to correctly predict a binary outcome (for a recent application to vote choice, see Elkink et al. 2020). Our outcome of interest is whether or not a respondent predicted the coalition formed after the election. We run 1,000 decision trees and estimate the mean decrease in accuracy for each independent variable. Higher values imply that leaving out a variable reduces the predictive accuracy and thus suggests a higher importance.

Figure 5 reports the results from the random forest model. Model 1 uses the ‘Desired coalition’ dummy as an indicator of wishful thinking. In Model 2, we use the left–right distance between a respondent and the selected government as an alternative measure of ‘wishful thinking’. We only include respondents who made a single coalition prediction. The results highlight that the *Probability of a Majority* and whether a coalition was the *Incumbent Government* are the two most important variables for correct predictions. The election ID, party system volatility and the election type (federal vs. state election) also increase the mean accuracy across the decision trees. The left–right distance between the respondent and the coalition in Model 2 has a higher importance than the ‘wishful thinking’ dummy in Model 1. Importantly, the individual-level variables do not contribute much to the predictive accuracy. *Age*, *Income*, *Interest in the Campaign*, the variables measuring *Wishful Thinking*, *Gender* and *Education* are usually the least important variables in the random

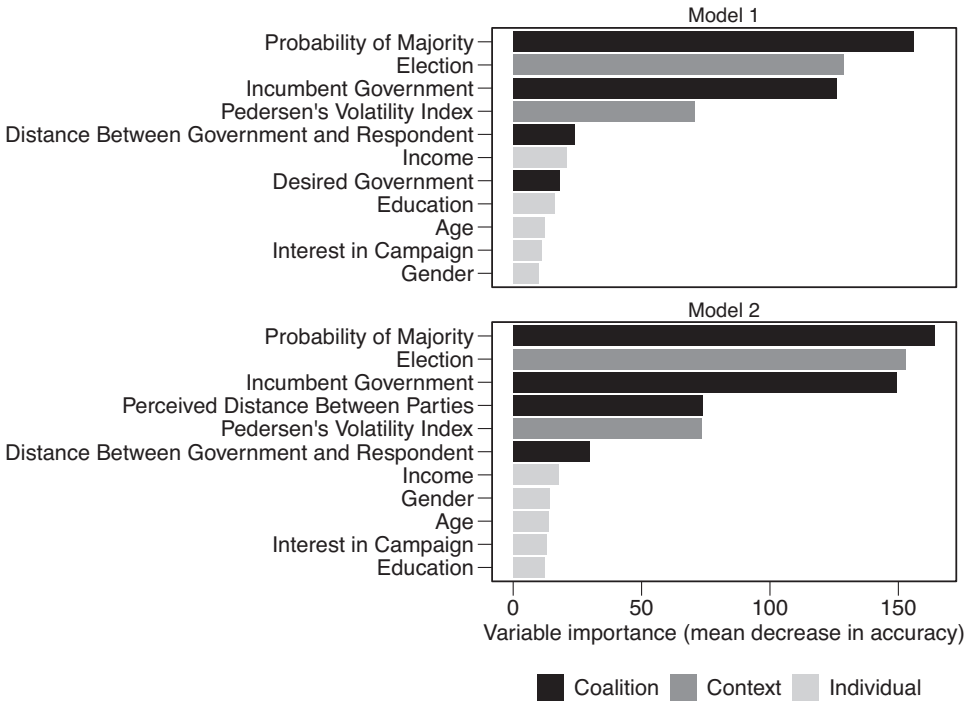


Figure 5. Relative variable importance in random forest models.

forest algorithms. The regression results and the random forest classification both highlight that the information environment (contextual and coalition-specific variables) is a much better predictor than attributes of the respondents.

Discussion

A voter’s ability to look to the future and choose between alternative possible governments is fundamental to our conception of representative democracy and responsible government. But the choice between alternatives is not always clear cut, especially in multi-party systems, where an ability to forecast election outcomes accurately is also relevant to models of voter choice. Patterns of political participation are shaped, amongst other things, by voters’ expectations. Who a voter casts a ballot for, or to which party the voter chooses to donate money or for which party a voter decides to volunteer for at election time can be swayed by who the voter thinks will win power. Significant numbers of voters are strategic (Downs 1957; Cox 1997) and an ability to accurately predict election outcomes is key to their vote choice.

Searles et al. (2018) make an even broader point when they note that ‘false electoral predictions can undermine the perceived legitimacy of institutions and officials by affecting whether electoral losers perceive their defeat as legitimate’ (889), with all that implies for someone’s willingness to support opposition tactics within the legislature. Within the context of multi-party politics and coalition formation it is likely that voters are accustomed to a complicated relationship between election results and government formation. Nevertheless, if the government which results from an

election ends up being unanticipated it is straightforward to expect that voters can question the system of how governments are formed. There are, then, broad consequences both for individual political action and, potentially also for governmental legitimacy, within voter expectations.

In terms of our results, we find that the predictability of alternative future governments varies significantly across multi-party systems. For example, arithmetically impossible coalitions or coalitions of ideologically distant parties are much less likely to be chosen as the predicted government. As previous work has shown, individual level attributes (e.g., education) are consequential, even though the strength of the relationship often depends on the modelling choice and selection of control variables. Second, we show the main drivers of the accuracy of voter predictions are related to the information context in which voters are embedded rather than individual level attributes themselves. There are simply some settings in which voters find it easier to form expectations than others and we can characterize these settings in terms of information availability and stability of the information environment. For example, the availability of opinion poll information has an effect as voters take parties' standing in the polls into consideration when predicting the government. Similarly, pre-election coalition discussions (more specifically media coverage of those discussions) are also seen to influence voter expectations.

This last point is consistent with a broad view of a 'rational public', that is, one that uses information in reasonable ways to draw reasonable conclusions about a political situation and act accordingly. This, in itself, is encouraging news for models which consider strategic voting in coalition contexts. On the other hand, the degree of error in voter predictions is such as to cast doubt on the extent to which voters are able to accurately predict which government they are voting *for*. After all, we do also find considerable error in voter predictions. There is, for example, strong and robust evidence of 'wishful thinking' when predicting which government will form and this is consistent, as we noted, with previous work. Voters are clear about which party they are voting for, and it may be still clear which parties and government they are voting against, but the evidence here shows that voters find it easier to know what they are voting for under some circumstances rather than others. That point is not so much a contribution to the literature on voter incompetence – after all, our main hypotheses speak to how voters respond to information – so much as a recognition that, sometimes, politics is hard to predict.

This paper examined sub-national elections in a highly consolidated, prosperous democracy, one with a traditionally stable party system (the recent rise of the AfD aside). But even here, we find that highly educated and interested voters, often find it difficult to forecast election outcomes. Extending the results to other national contexts may reveal the depth of this challenge in less auspicious settings. Overall, the paper underscores the importance of high-quality information (e.g., opinion polls, extensive newspaper coverage) in the democratic process.

Acknowledgements

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Online Appendix

Additional supporting information may be found in the Online Appendix section at the end of the article:

- A: Predicting the probability of a majority of seats**
- B: Estimating coalition signals in newspapers**
- C: The impact of the survey instrument**
- D: Predicting “do not know” responses or missing answers**
- E: The most distant parties in coalitions**
- F: Predicting the government in state elections**
- G: Predicting the government in federal elections**
- H: Robustness tests**
- I: Election surveys used in this paper**

Notes

1. The GLES administered pre-election studies prior to all Land elections since 2011, with the exception of Bremen, Hamburg and the Saarland. The GLES surveys and alternative surveys for these states (see, e.g., Bowler et al. 2018) were conducted after election day. We also had to exclude the election in Saxony-Anhalt (2016) because the coalition to be formed (CDU, SPD, Greens) was not part of the choice set in the survey. Therefore, respondents had no chance to predict the correct coalition.
2. Unfortunately, these four surveys do not contain items on the desired government. Although we can calculate the correct predictions, we cannot test ‘wishful thinking’ effects for these four elections. Yet, the *Ideological Distance Government and Respondent* variable – an alternative measure for a desired government – can be constructed for all 22 elections and leads to the same conclusions as the *Desired Government* dummy.
3. We scraped all available Land election polls from <https://wahlrecht.de>, a website that collects all election polls published by major German polling institutes.
4. Parties that do not receive more than 5 per cent of the votes in the aggregated simulated elections are excluded from the seat distributions. This step is necessary because of the 5 per cent threshold that exists in all state parliaments and the Bundestag.
5. The probability for each coalition equals the percentage of the simulations a coalition would obtain sufficient seats for a majority. Probabilities (depending on which parties are estimated to be represented in parliament) for the following governments were predicted: (1) CDU/CSU; (2) CDU, SPD; (3) CDU, FDP; (4) CDU, Greens; (5) CDU, FDP, Greens; (6) SPD; (7) SPD, Greens; (8) SPD, FDP, Greens; (9) SPD, Left; (10); (11) SPD, FDP; (12) SPD, Left, Greens; (13): CSU, Free Voters; (14) SPD, Greens, Free Voters; (15) CDU, AfD.
6. In Section C of the Supporting Information, we examine whether there are question wording effects.
7. We standardise continuous variables by subtracting their means (at the relevant election) and dividing by two times their standard deviations (at the relevant election). This procedure makes it easier to compare the effects with the binary variables (Gelman, 2008).
8. In these models, we exclude *Incumbent Government* due to multicollinearity issues with *Coalition Signals in Newspapers*. Incumbent coalitions are naturally mentioned more often in news outlets than other possible governments.
9. The following election studies do not contain the *Desired Government* variable but include the items necessary to construct the absolute distance between respondent’s left–right position and the average left–right position of the government option: Bavaria 2013; North Rhine-Westphalia 2012; Schleswig-Holstein 2012; Lower Saxony 2013. Only in Bavaria in 2013 (only single-party government) does the coefficient fail to reach statistical significance.
10. We thank one of our anonymous reviewers for raising this point.

11. In Sections F and G, in the Supporting Information, we report and interpret the coefficients for aggregated models for all federal and state elections. The direction of coefficients corresponds to the evidence from the election-specific analyses.
12. A pattern that is consistent with an explanation in which state elections are seen as ‘second order’ (Reif and Schmitt, 1980).
13. In Section D in the Supporting Information, we assess the drivers of ‘Do not know’ responses.

References

- Aldrich, J.H., Blais, A. & Stephenson, L.B. (2018). *The many faces of strategic voting: Tactical behavior in electoral systems around the world*. Ann Arbor, MI: University of Michigan Press.
- Armstrong, D.A. & Duch, R.M. (2010). Why can voters anticipate post-election coalition formation likelihoods? *Electoral Studies* 29(3): 308–315.
- Bargsted, M.A. & Kedar, O. (2009). Coalition-targeted Duvergerian voting: How expectations affect voter choice under proportional representation. *American Journal of Political Science* 53(2): 307–323.
- Bender, A. & Bauer, A. (2018). coalitions: Coalition probabilities in multi-party democracies. *Journal of Open Source Software* 3(23): 606. <https://doi.org/10.21105/joss.00606>
- Benoit, K., Watanabe, K., Wang, H., Nulty, P., Obeng, A., Müller, S. & Matsuo, A. (2018). quanteda: An R package for the quantitative analysis of textual data. *Journal of Open Source Software* 3(30): 774. <https://doi.org/10.21105/joss.00774>
- Best, V. (2015). *Koalitionssignale bei Landtagswahlen: Eine empirische Analyse von 1990 bis 2012*. Baden-Baden: Nomos.
- Blais, A., Aldrich, J.H., Indridason, I.H. & Levine, R. (2006). Do voters vote for government coalitions? Testing Downs’ pessimistic conclusion. *Party Politics* 12(6): 691–705.
- Bowler, S., Karp, J.A. & Donovan, T. (2010). Strategic coalition voting: Evidence from New Zealand. *Electoral Studies* 29(3): 350–357.
- Bowler, S., Bräuninger, T., Debus, M. & Indridason, I.H. (2016). Let’s just agree to disagree: Dispute resolute mechanisms in coalition agreements. *The Journal of Politics* 78(4): 1264–1278.
- Bowler, S., Gschwend, T. & Indridason, I.H. (2020). Coalition policy perceptions. *The Journal of Politics* 82(4): 1458–1473.
- Bowler, S., McElroy, G. & Müller, S. (2018). Voter preferences and party loyalty under cumulative voting: Political behaviour after electoral reform in Bremen and Hamburg. *Electoral Studies* 51: 93–102.
- Bräuninger, T., Debus, M., Müller, J. & Stecker, C. (2020). *Parteienwettbewerb in den deutschen Bundesländern*. 2nd edn. Wiesbaden: Springer VS.
- Breiman, L. (2001). Random forests. *Machine Learning* 45(1): 5–32.
- Cox, G. (1997). *Making votes count. Strategic coordination in the world’s electoral systems*. Cambridge: Cambridge University Press.
- Debus, M. (2009). Pre-electoral commitments and government formation. *Public Choice* 138(1–2): 45–64.
- Debus, M. & Müller, J. (2013). Do voters’ coalition preferences affect government formation? *West European Politics* 36(5): 1007–1028.
- Debus, M. & Müller, J. (2014). Expected utility or learned familiarity? The formation of voters’ coalition preferences. *Electoral Studies* 34: 54–67.
- Downs, A. (1957). *An economic theory of democracy*. New York: Harper & Row.
- Duch, R.M., May, J. & Armstrong, D.A. (2010). Coalition-directed voting in multiparty democracies. *American Political Science Review* 104(4): 698–719.
- Elkink, J.A., Farrell, D.M., Marien, S., Reidy, T. & Suiter, J. (2020). The death of conservative Ireland? The 2018 abortion referendum. *Electoral Studies* 65: 102142. doi: 10.1016/j.electstud.2020.102142.
- Fisher, S.D. & Hobolt, S.B. (2010). Coalition government and electoral accountability. *Electoral Studies* 29(3): 358–369.
- Fortunato, D., Stevenson, R.T. & Vonnahme, G. (2016). Context and political knowledge: Explaining cross-national variation in partisan left-right knowledge. *The Journal of Politics* 78(4): 1211–1228.

- Gelman, A. (2008). Scaling regression inputs by dividing by two standard deviations. *Statistics in Medicine* 27(15): 2865–2873.
- Golder, S.N. (2005). Pre-electoral coalitions in comparative perspective: A test of existing hypotheses. *Electoral Studies* 24(4): 643–663.
- Golder, S.N. (2006). Pre-electoral coalition formation in parliamentary democracies. *British Journal of Political Science* 36(2): 193–212.
- Gross, M. & Debus, M. (2018). Gaining new insights by going local: Determinants of coalition formation in mixed democratic polities. *Public Choice* 174(1–2): 61–80.
- Gschwend, T. & Meffert, M.F. (2017). Strategic voting. In: K. Arzheimer, J. Evans & M.S. Lewis-Beck (eds), *The SAGE handbook of electoral behaviour*, Vol. 2 (pp. 339–366). London: SAGE.
- Gschwend, T., Meffert, M.F. & Stoetzer, L.F. (2017). Weighting parties and coalitions: How coalition signals influence voting behavior. *The Journal of Politics* 79(2): 642–655.
- Hobolt, S.B. & Hoerner, J.M. (2020). The mobilising effect of political choice. *European Journal of Political Research* 59(2): 229–247.
- Ibenskas, R. (2016). Understanding pre-electoral coalitions in Central and Eastern Europe. *British Journal of Political Science* 46(4): 743–761.
- Indridason, I.H. (2011a). Coalition formation and polarisation. *European Journal of Political Research* 50(5): 689–718.
- Indridason, I.H. (2011b). Proportional representation, majoritarian legislatures, and coalitional voting. *American Journal of Political Science* 55(4): 955–971.
- Irwin, G.A. & Van Holsteyn, J.J. (2012). Strategic electoral considerations under proportional representation. *Electoral Studies* 31(1): 184–191.
- Kedar, O. (2005). When moderate voters prefer extreme parties: Policy balancing in parliamentary elections. *American Political Science Review* 99(2): 185–199.
- Lago, I. (2008). Rational expectations or heuristics? Strategic voting in proportional representation systems. *Party Politics* 14(1): 31–49.
- Liaw, A. & Wiener, M. (2002). Classification and regression by randomForest. *R News* 2(3): 18–22.
- Martin, L.W. & Stevenson, R.T. (2001). Government formation in parliamentary democracies. *American Journal of Political Science* 45(1): 33–50.
- Martin, L.W. & Stevenson, R.T. (2010). The conditional impact of incumbency on government formation. *American Political Science Review* 104(3): 503–518.
- Martin, L.W. & Vanberg, G. (2003). Wasting time? The impact of ideology and size on delay in coalition formation. *British Journal of Political Science* 33(2): 323–332.
- McFadden, D. (1974). Conditional logit analysis of qualitative choice behavior. In: P. Zarembka (ed.), *Frontiers in econometrics* (pp. 105–142). New York: Academic Press.
- Meffert, M.F. & Gschwend, T. (2010). Strategic coalition voting: Evidence from Austria. *Electoral Studies* 29(3): 339–349.
- Meffert, M.F. & Gschwend, T. (2011). Polls, coalition signals and strategic voting: An experimental investigation of perceptions and effects. *European Journal of Political Research* 50(5): 636–667.
- Meffert, M.F., Huber, S., Gschwend, T. & Pappi, F.U. (2011). More than wishful thinking: Causes and consequences of voters' electoral expectations about parties and coalitions. *Electoral Studies* 30(4): 804–815.
- Pedersen, M.N. (1979). The dynamics of European party systems: Changing patterns of electoral volatility. *European Journal of Political Research* 7(1): 1–26.
- Powell, G.B. (2000). *Elections as instruments of democracy: Majoritarian and proportional visions*. New Haven, CT: Yale University Press.
- Rasmussen, S.H.R. & Nørgaard, A.S. (2018). When and why does education matter? Motivation and resource effects in political efficacy. *European Journal of Political Research* 57(1): 24–46.
- Reif, K. & Schmitt, H. (1980). Nine second-order national elections: A conceptual framework for the analysis of European Election results. *European Journal of Political Research* 8(1): 3–44.
- Searles, K., Smith, G. & Sui, M. (2018). Partisan media, electoral predictions, and wishful thinking. *Public Opinion Quarterly* 82(S1): 888–910.
- Snyder, R. (2001). Scaling down: The subnational comparative method. *Studies in Comparative International Development* 36(1): 93–110.

- Stoetzer, L.F. & Orlowski, M. (2020). Estimating coalition majorities during political campaigns based on pre-election polls. *Journal of Elections, Public Opinion and Parties* 30(1): 126–137.
- Tavits, M. (2008). On the linkage between electoral volatility and party system instability in Central and Eastern Europe. *European Journal of Political Research* 47(5): 537–555.
- Watanabe, K. (2018). Newsmap: A semi-supervised approach to geographical news classification. *Digital Journalism* 6(3): 294–309.
- Zaller, J.R. (1992). *The nature and origins of mass opinion*. Cambridge: Cambridge University Press.

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