Coalition-directed Voting as a Lottery

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Abstract

When voters support parties in multi-party democracies, it is often uncertain what coalition government the party is likely to join. How do voters deal with this type of uncertainty? In this paper, we use a conceptual analogy between coalition-directed voting and participating in a lottery to develop a novel conceptualization of coalition-directed voting. We present observational and experimental evidence that supports the idea that voters are risk-averse when considering coalition government options. The perception of uncertain coalition prospects of a party negatively affects the propensity to vote for parties, even when holding the expected coalition government payoffs constant. In a survey vignette experiment during the 2021 German federal election, we find that uncertain coalition prospects reduce the propensity to support a party, compared to certain coalition prospects with the same expected coalition government payoffs. The findings provide important insights for research on strategic voting theories and parties' coalition strategies.

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1 Introduction

Democracies with proportional electoral systems around the globe are usually governed by coalition governments. Comparative political scientists and democratic theorists have discussed the potential of accountability and representation in those systems (Kam et al., 2020; Powell, 2000; Ganghof, 2016). One central threat to accountability is that "elections in polities characterized by coalition governments present uncertainty for voters" (Bargsted and Kedar, 2009, 207). The textbook perspective of this uncertainty is that coalition governments blur the clarity of responsibility as they implement compromises between the governing parties, making it difficult for voters to retrospectively sanction any particular party and to hold coalition governments accountable (Powell, 2000). Yet, this uncertainty also matters for the prospective selection of the new government. Even if voters know which coalition government to sanction and which to reward, they most often cannot directly choose their government coalition. Instead, they have to vote for parties. However, voters are uncertain about the coalition government a party is likely to enter after the election. The lack of clarity about parties' government prospects makes it difficult for voters to mandate a party for their preferred government, and – in turn – hold parties accountable.

How voters consider the lack of clarity about parties' government prospects is fundamental for our understanding of how accountability functions in proportional systems. Do voters reject or embrace the fact that they are uncertain about what a vote for a party implies for the possible coalition governments in which that party might participate? Existing studies of coalition-directed voting underline that many voters consider coalition government prospects (Duch et al., 2010; Meffert and Gschwend, 2010; Bargsted and Kedar, 2009; Kedar, 2012; Blais et al., 2006), but do not investigate how the lack of clarity about these prospects impacts their support of parties. At the heart of this discussion is the question about voters risk preferences in coalition-directed voting decisions. Risk-averse, coalition-directed voters would value more clarity about what

their party vote choice would imply for the government participation of a party. Accordingly, the lack of clarity creates an inherent disutility for such voters. Voters, however, may also welcome the lack of clarity and find the opportunity to increase the chances of getting their preferred governing coalition through their vote enticing. This would make voters appear to be risk-seeking. Clarifying the role of risk preferences in the domain of coalition-directed voting helps scholars to assess the degree to which voters actually use elections as instruments of democracy, either retrospectively, to hold governments accountable or, prospectively, to provide a clear mandate for the future government (Powell, 2000).

We propose a novel conceptualization of coalition-directed voting as a lottery to address the question of how voters deal with the lack of clarity in coalition government prospects. The starting point of our theoretical considerations are expected utility models for coalition-directed voting in multiparty democracies. In these models, voters evaluate parties not only based on party characteristics itself, but also based on the evaluation of coalition governments a party is likely to end up in (Duch et al., 2010; Gschwend et al., 2017). In our model, a party either ends up in government or in the opposition. If it governs, there are multiple coalition governments that the party can end up in. Voters evaluate a party's government and opposition outcomes, attach payoffs to them, and probabilities that the specific outcomes for a party accrue. The combination of perceived payoffs and probabilities essentially constitutes a post-election lottery for each party, and voters can compare the expected utility derived from the post-election lotteries to decide which party to support.

The conceptualization of coalition-directed voting as a lottery permits us to study the different behavioral consequences of voters being risk-averse or risk-seeking in their decisions. In the expected utility model, the type of risk preferences depends on the assumed functional form of the utility function for the government and opposition payoffs. As it is difficult to observe (and even to estimate) the functional form, we derive

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two theoretical implications of our novel conceptualization to empirically infer typical voters' risk preferences in coalition-directed voting without relying on functional form assumptions. The first leads to a observational survey research design, the second to an experimental research design.

Equipped with the observational implications of our theory, we present survey evidence that the average voter is risk-averse when it comes to coalition-directed decisions. We field two surveys in Sweden and New Zealand during the last general elections and use secondary data from additional 17 surveys from 13 election campaigns in Austria, Belgium, Germany, Netherlands, Spain, and Sweden. The surveys contain the necessary measures about the perceived government probabilities, and the associated perceived government payoffs. A meta-analysis of the different survey results provides evidence that average voters are risk-averse, as they are more likely to vote for a party if it is more certain what coalition government a party is likely to enter – holding the expected government payoffs constant. We discuss and control for potential confounders, such as partisan misperceptions of coalition governments, and find the general conclusions to hold.

Next to the observational survey results, we present results from a within-subject vignette survey experiment to test whether the lack of clarity about coalition government prospects is also causally related to vote choice. We conducted our survey experiments during the German federal elections of 2021 and presented respondents with different hypothetical scenarios: We ask respondents about their propensity to vote for the CDU/CSU and the Greens under three hypothetical coalition government scenarios. We determine the respondent-specific vignette scenarios based on questions about the perceived government probabilities and associated perceived government payoffs for the CDU/CSU and the Greens. The pre-registered analysis confirms the finding that voters are risk-averse. A scenario where the CDU/CSU enters a particular coalition government with certainty results in a higher propensity to vote, compared to the two

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"uncertainty" scenarios where two additional coalition government options (that preserve the expected government payoff) are feasible. This way, we assure that the findings of the observational study are not due to unobserved confounding. The results provide further evidence that particular voters, who consider the party a viable voting option, are risk-averse when considering coalition governing prospects.

The finding that voters are on average risk-averse in the domain of coalition-directed voting has far-reaching implications for our understanding of electoral institutions. The uncertainty that exists in electoral systems where voters cannot choose their government directly typically reduces voters' propensity to vote for those parties. It underlines that the average voter would like to support parties with clear coalition government prospects, to be able to provide a strong mandate for the future government (Golder, 2006). This raises the question of how harmful the consequences of this uncertainty are and whether there are ways to mediate them. Our research speaks to informal institutions that influence the predictability of the coalition government formation process in proportional systems. One informal institution are pre-electoral coalitions and coalition signals (Gschwend et al., 2017; Golder, 2005; Bowler et al., 2022). Parties that clearly signal what governments they are willing to enter reduce the uncertainty on the side of risk-averse coalition-directed voters. This means that coalition signals endow proportional systems with desirable properties of majoritarian systems (Clark et al., 2013; Strom, 1990; Powell, 2000). In a similar spirit, our fundamental research on risk preferences in coalition-directed voting leads to further implications for political behavior, accountability, and party competition that open up avenues for further research on vote choice, party competition and legislative politics (Indridason, 2011; Kedar, 2012). We discuss this in more detail toward the end of the article.

2 Coalition Government Prospects and Electoral Behavior

Elections in proportional representation systems with coalition governments often present unclear prospects of what support for a party implies for the future government it might enter. In the last German federal election, for example, voters were uncertain what a vote for Angela Merkel's Christian Democratic Union (CDU/CSU) would imply for government formation. The CDU/CSU could either end up in a coalition with the Greens and the Free Democrats (FDP), continue a grand coalition with the Social Democratic Party (SPD), or although considered very unlikely form a right-wing coalition together with the FDP and the populist-right AfD (*Alternative für Deutschland*). Should the CDU/CSU not be able to form a coalition, the party would find itself sitting on the opposition bench after the new government has been formed.

A large literature on coalition-directed and strategic voting in proportional systems reveals that voters take these coalition government prospects into account when voting for parties (Duch et al., 2010; Meffert and Gschwend, 2010; Bargsted and Kedar, 2009; Kedar, 2012; Blais et al., 2006). Voters are able to assess the chances of coalition government formations (see e.g. Bowler et al., 2022), and their expected positions (see e.g. Bowler et al., 2020; Fortunato et al., 2021), permitting voters to integrate these expectations of which governmental coalition will form into their decision calculus. Duch et al. (2010), for example, show that, across 30 countries, voters use the expected coalition ideology next to party ideology to inform their vote decision. These rational considerations can lead voters to desert their most preferred party and cast a strategic, coalition-directed vote (Bargsted and Kedar, 2009). The studies, thereby, confirm that voters judge a party not only by its cover, but also by what government they get from it. And voters supposedly care about different government coalitions because of the possible policy positions they represent.

However, the aforementioned studies have not focused on the direct effect of the lack of clarity about coalition government prospects on voters' propensity to vote for parties.

Coalition-directed vote choice models in Duch et al. (2010) and Bahnsen et al. (2020), for example, propose that voters can form expectations about the post-electoral bargain process and integrate them in their calculus. In contrast to previous research, we argue that the lack of clarity given the uncertainty regarding the coalition government prospects can have a separate and distinct effect on voters' evaluation of parties. Consider a German voter in the example above that supports the CDU/CSU-SPD coalition but opposes a coalition of the CDU/CSU with Greens and FDP. The voter can weigh the chances and form expectations about these different coalition government prospects of the CDU/CSU and integrate them into her decision calculus. But the mere uncertainty of which governing coalition the CDU/CSU will join could deter voters - and that's regardless of the expected coalition government payoffs for the CDU/CSU. This would make the voter risk-averse with respect to the coalition-directed evaluation of the CDU/CSU, with a penalty for the unclear coalition government prospects. It may also be the voter welcomes the lack of clarity and finds the possibility to get her preferred CDU/CSU-SPD coalition government attractive, even at the chance that CDU/CSU could end up in the coalition with FDP and Greens. In this portrayal, the voter would be risk-seeking and welcomes the open prospects of the party.

The role of risk preferences in coalition-directed voting decisions has not been studied yet. In expected utility models, that are common in the literature, the functional form of the utility function decides about the risk preferences of the decision-makers. Previous literature dealt with risk preferences in political decisions by assuming certain risk profiles of voters in two-party (Shepsle, 1972) or multi-party systems (Golder, 2006). This also holds for coalition-directed voting. For example, Duch et al. (2010) assume a quadratic utility function that generally implies risk-averse behavior (see also Armstrong and Duch, 2010; Bargsted and Kedar, 2009; Kedar, 2005). In her study on pre-electoral coalitions, Golder argues that such coalitions could be electorally advantageous if voters are "risk-averse with regard to the policy positions of potential future

governments"(Golder, 2006, p.7), but does not provide empirical analysis to evaluate this claim.

Other studies have developed observational and experimental approaches to evaluate risk preferences for other political decisions. An important other area of political decisions identifies risk preferences for ambiguous policy platforms (Berinsky et al., 2007; Tomz and Van Houweling, 2009). Berinsky et al. (2007) use survey analyses to evaluate the functional form of a spatial utility function and find support for the notation that voters are risk-averse in spatial utility decisions. Tomz and Van Houweling (2009), to the contrary, uses experimental methods and find no clear indication of risk-aversion, rather risk-seeking or neutral behavior. No study, however, conducted similar evaluations for coalition-directed voting. It is important to note that the way voters deal with risk and uncertainty for ambiguous platforms, or other decisions, might be different in the domain of coalition-directed voting. Risk-preferences for coalition-directed voting decisions can be domain specific.

3 Conceptualizing Coalition-directed Voting as Participating in a Lottery

There is an analogy between voting in proportional systems with coalition governments and participating in a lottery. Both coalition-directed voting for a party and buying a lottery ticket are choices under uncertainty, as in both cases it is unclear what the final outcome will be. When voting in proportional systems, the final outcome of interest is the government ultimately formed (see, e.g., Bargsted and Kedar, 2009; Duch et al., 2010; Gschwend et al., 2017; Kedar, 2005, 2012; Indridason, 2011) and how much the voter benefits from this, while when participating in a lottery, it is money. Just as it is uncertain how much money a lottery will bring in, it is typically uncertain in which coalition government a chosen party will end up in and what the government policies will

be. For example, when voting for the CDU/CSU in the 2021 German federal election, one did not know for sure in advance whether the CDU/CSU would end up in a coalition with the Greens and the FDP, continue a grand coalition with SPD, or even (albeit unlikely) enter a right-wing coalition with the AfD and the FDP. And, of course, it was also uncertain if the CDU/CSU will end up in government at all, or find itself on the opposition bench. Therefore, if voters care about the next government and the implemented policies, choosing a party to vote for from a set of different parties is akin conceptually to buying a lottery ticket.

Just as the decision to buy a lottery ticket is shaped by risk preferences, risk preferences should also play a decisive role for voting in proportional systems. Risk-averse (risk-seeking) voters should be more likely to vote for a party the more certain (uncertain) these voters are about which government that party will enter after the election, all else being equal. The voters' expectations about which government a party will enter are shaped by that party's pre-electoral coalition signals (e.g., Bahnsen et al., 2020; Bowler et al., 2022; Falcó-Gimeno and Muñoz, 2017) or pre-electoral opinion polls (Stoetzer and Orlowski, 2020). While there is extensive evidence indicating that adult individuals are on average risk-averse when it comes to monetary gambles (e.g., Paulsen et al., 2012), there is as yet no evidence on whether individuals are risk-averse, risk-seeking, or risk-neutral in regard to coalition-directed voting.

Expected utility theory provides us with a framework for describing decisions under uncertainty, such as coalition-directed voting in proportional systems. This helps us to derive expectations about what should be observed if voters were risk-averse or risk-seeking when considering coalition government options. At the heart of expected utility theory is the concept of the lottery. We speak of *post-election lotteries* and mean the following: when a voter i is voting for a party j she is participating in a post-election lottery $L_{i,j}$.

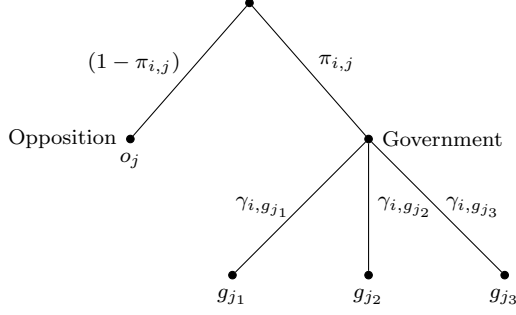This lottery is essentially characterized by all possible post-electoral outcomes for

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Figure 1: Post-election lottery $L_{i,j}$ for party j and voter i with post-electoral outcomes $(o_j, g_{j_1}, g_{j_2}, g_{j_3})$ and perceived probabilities $(1 - \pi_{i,j}, \pi_{i,j}\gamma_{i,g_{j_1}}, \pi_{i,j}\gamma_{i,g_{j_2}}, \pi_{i,j}\gamma_{i,g_{j_3}})$.

party j and their perceived probabilities (see Figure 1). Party j could either end up in opposition, resulting in *opposition outcome* o_j, or in government, resulting in *government outcome* g, with perceived probabilities $1 - \pi_{i,j}$ and $\pi_{i,j}$, respectively. Conditional on being in the government, party j can enter one of several possible (coalition) governments, resulting in one of the *government outcomes* $g_{j_1}, \ldots, g_{j_N}$, with perceived probabilities $\gamma_{i,g_{j_1}}, \ldots, \gamma_{i,g_{j_N}}$ (*perceived government probabilities*) where $\sum_k \gamma_{i,g_{j_k}} = 1$.

Voters derive a perceived payoff from each opposition and government outcome. Voter i derives a *perceived opposition payoff*, $O_{i,j} \in \mathbb{R}$, from the opposition outcome o_j, depending on how much she likes that party j is in parliamentary opposition versus that it is not in parliament at all.[1] Voter i derives *perceived government payoffs*, $G_{i,g_{j_1}}, \ldots, G_{i,g_{j_N}} \in \mathbb{R}$, from the government outcomes $g_{j_1}, \ldots, g_{j_N}$, depending on how much she likes the different governments party j could enter. The government payoffs are ordered such that $G_{i,g_{j_1}} \leq G_{i,g_{j_2}} \leq \cdots \leq G_{i,g_{j_N}}$. For voter i and party j, we denote the post-election lottery by the perceived probabilities and payoffs for all possible post-election outcomes of party j:

$$L_{i,j} = \{1 - \pi_{i,j}, O_{i,j} \; ; \; \pi_{i,j}\gamma_{i,g_{j_1}}, G_{i,g_{j_1}}; \; \ldots; \; \pi_{i,j}\gamma_{i,g_{j_N}}, G_{i,g_{j_N}}\}, \tag{1}$$

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[1] Accentuating the absence from parliament as the comparison is crucial as otherwise the perceived payoffs can be confused with not being in government.

To stay with the example of the 2021 German federal election, voting for the CDU/CSU implies participating in lottery $L_{i,\text{CDU/CSU}} = \{1 - \pi_{i,j}, O_{i,j};\ \pi_{i,j}\gamma_{i,\text{CDU/CSU-Greens-FDP}},$ $G_{i,\text{CDU/CSU-Greens-FDP}};\ \pi_{i,j}\gamma_{i,\text{CDU/CSU-SPD}},\ G_{i,\text{CDU/CSU-SPD}};\ \pi_{i,j}\gamma_{i,\text{CDU/CSU-AfD-FDP}}$, $G_{i,\text{CDU/CSU-AfD-FDP}}\}$.[2] Analogously, a vote for the SPD implies participating in lottery $L_{i,SPD}$. It should be noted that probabilities and payoffs are *perceived* quantities and thus individual-specific, as indicated by the subscript i.

We can consider post-election lottery $L_{i,j}$ as a *compound lottery*, which will be useful later on. This means that we can define $L_{i,j}$ as a lottery consisting of a *government lottery* $L_{i,j}^G$ and an *opposition lottery* $L_{i,j}^O$, with $L_{i,j}^G = \{\gamma_{i,g_{j_1}}, G_{i,g_{j_1}}; \ldots; \gamma_{i,g_{j_N}}, G_{i,g_{j_N}}\}$ and $L_{i,j}^O = \{1, O_{i,j}\}$, such that $L_{i,j} = \pi_{i,j}L_{i,j}^G + (1 - \pi_{i,j})L_{i,j}^O$. According to expected utility theory, voters seek to maximize expected utility when choosing a party to vote for from a menu of different parties. The expected utility, $E[u(L_{i,j})]$, voter i derives from post-election lottery $L_{i,j}$ is (see Figure 2):

$$E[u(L_{i,j})] = \pi_{i,j}E[u(L_{i,j}^G)] + (1 - \pi_{i,j})E[u(L_{i,j}^O)] \tag{2}$$

$$= \pi_{i,j}\sum_k \gamma_{i,g_{j_k}}u(G_{i,g_{j_k}}) + (1 - \pi_{i,j})u(O_{i,j}). \tag{3}$$

A monotonically increasing and continuous (Mas-Colell et al., 1995, p. 185) utility function $u(\cdot)$ describes how much utility the voter derives from opposition and government payoffs. Note that it is important to differentiate between utility function $u(\cdot)$ and the expected utility function $E[u(\cdot)]$. While $u(\cdot)$ indicates utility derived from *payoffs*, $E[u(\cdot)]$ indicates utility derived from post-election *lotteries*. For better distinction, $u(\cdot)$ is typically called *Bernoulli utility function* whereas $E[u(\cdot)]$ is called *von Neumann-Morgenstern utility function* (see also Mas-Colell et al., 1995, p. 184). Also note the difference between $E[u(L_{i,j})]$, the *expected utility* and $E[L_{i,j}]$, the mean (*expected value*) of post-election lottery $L_{i,j}$.

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[2]For simplicity of exposition, we assume that there were no other governments, the CDU/CSU could have entered after the election.

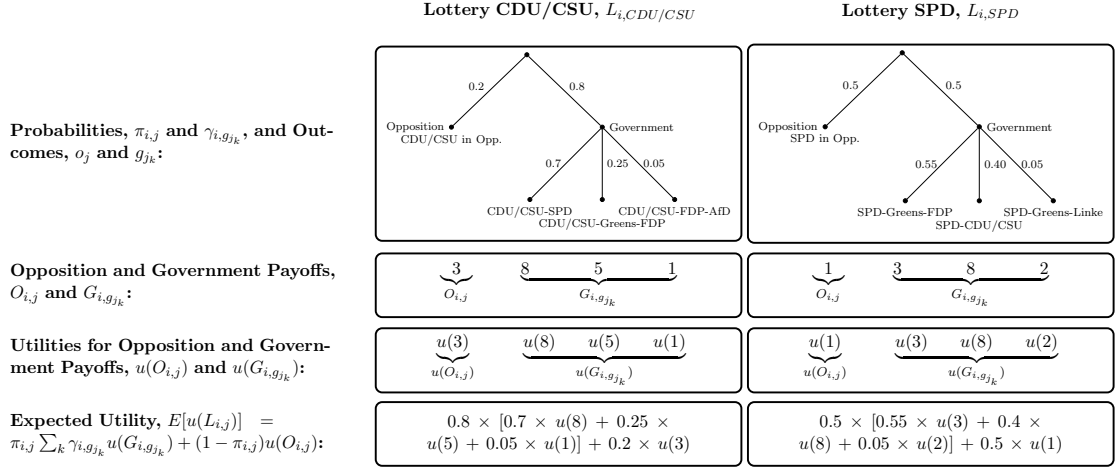|	Lottery CDU/CSU, $L_{i,CDU/CSU}$	Lottery SPD, $L_{i,SPD}$
Probabilities, $\pi_{i,j}$ and $\gamma_{i,g_{j_k}}$, and Outcomes, o_j and g_{j_k}:	0.2 Opposition CDU/CSU in Opp. — 0.8 Government — 0.7 / 0.25 / 0.05 → CDU/CSU-SPD, CDU/CSU-Greens-FDP, CDU/CSU-FDP-AfD	0.5 Opposition SPD in Opp. — 0.5 Government — 0.55 / 0.40 / 0.05 → SPD-Greens-FDP, SPD-CDU/CSU, SPD-Greens-Linke
Opposition and Government Payoffs, $O_{i,j}$ and $G_{i,g_{j_k}}$:	$\underbrace{3}_{O_{i,j}}$ $\underbrace{8 \quad 5 \quad 1}_{G_{i,g_{j_k}}}$	$\underbrace{1}_{O_{i,j}}$ $\underbrace{3 \quad 8 \quad 2}_{G_{i,g_{j_k}}}$
Utilities for Opposition and Government Payoffs, $u(O_{i,j})$ and $u(G_{i,g_{j_k}})$:	$\underbrace{u(3)}_{u(O_{i,j})}$ $\underbrace{u(8) \quad u(5) \quad u(1)}_{u(G_{i,g_{j_k}})}$	$\underbrace{u(1)}_{u(O_{i,j})}$ $\underbrace{u(3) \quad u(8) \quad u(2)}_{u(G_{i,g_{j_k}})}$
Expected Utility, $E[u(L_{i,j})] = \pi_{i,j}\sum_k \gamma_{i,g_{j_k}} u(G_{i,g_{j_k}}) + (1-\pi_{i,j})u(O_{i,j})$:	$0.8 \times [0.7 \times u(8) + 0.25 \times u(5) + 0.05 \times u(1)] + 0.2 \times u(3)$	$0.5 \times [0.55 \times u(3) + 0.4 \times u(8) + 0.05 \times u(2)] + 0.5 \times u(1)$

Figure 2: Example for post-election lotteries for the CDU/CSU and the SPD in the 2021 German federal election for a fictional voter i.

In the previous example from the 2021 German federal election, maximizing expected utility implies comparing the expected utilities for all the different post-election lotteries, e.g., $E[u(L_{i,CDU/CSU})]$ and $E[u(L_{i,SPD})]$, and voting for the party whose post-election lottery has the highest expected utility. Figure 2 shows the calculation of the expected utilities for the two parties' lotteries for a fictional voter. The voter in this example has a particularly high payoff for a CDU/CSU-SPD coalition ($G_{i,CDU/CSU\text{-}SPD} = 8$), but perceives a higher probability for this coalition outcome in the CDU/CSU post-election lottery (0.8×0.7) versus the SPD post-election lottery (0.5×0.55). For the calculation of the expected utility of the lotteries, however, all utilities from the payoffs should be considered and weighted accordingly. Note, we can only calculate the expected utility in Figure 2 as a function of $u(\cdot)$, because we, unfortunately, do not know the functional form and, thus, cannot directly infer the voter's risk preference.

The risk preferences of the voter i in the coalition choice are determined by the functional form of the Bernoulli utility function $u(\cdot)$. Voter i is risk-averse if and only if $u(\cdot)$ is concave. She is risk-seeking if and only if $u(\cdot)$ is convex and risk-neutral if and only if $u(\cdot)$ is linear. The literature on coalition-directed voting typically assumes a functional

form of $u(\cdot)$ that implies risk-aversion. For example, Duch et al. (2010) and Golder (2006, p. 39) suppose concave Bernoulli utility functions.

So far, we developed a new decision-theoretic formalization of coalition-directed voting that conceptualizes this behavior as equivalent to participating in a lottery. The remaining challenge is to clarify what we can learn about risk preferences without knowing the shape of the Bernoulli utility function $u(\cdot)$? Employing parametric models to estimate the utility function in voting decisions can deliver results that are sensitive to model specifications. Instead, we develop two observable implications of our theory and use different empirical strategies to test them: (1) by using the approach of the mean-variance approximation, we obtain observational evidence (Section 4) and (2) by using the concept of the mean-preserving spread, we gather experimental evidence on voters' risk preferences (Section 5).

4 Observational Evidence

In this section, we assess whether there is consistent evidence across a wide range of countries that voters are risk-averse, risk-seeking, or risk-neutral when it comes to coalition-directed voting. We first derive an observable implication from our theory, drawing on the mean-variance approximation of the voters' unknown (expected) utility function. Second, we describe how we test this implication using primary and secondary data across 17 surveys from 13 election campaigns in Austria, Belgium, Germany, Netherlands, New Zealand, Spain, and Sweden. Third, we show that the observational evidence is consistent with the idea that typical voters are risk-averse when it comes to coalition-directed voting.

4.1 Observable Implication: Mean-Variance Approximation

In order to extract voters' risk preferences from observational data without making functional-form assumptions, we make use of the mean-variance approach originat-

ing from financial economics and mathematical finance (Markowitz, 1952; Levy and Markowitz, 1979). The idea is to first approximate expected utility $E[u(L_{i,j})]$ by a function of the mean, $E[L_{i,j}]$, and the variance, $Var[L_{i,j}]$, of the post-election lottery. We then exploit this approximation to derive an observable implication of how risk preferences influence expected utilities. Specifically, the mean-variance approximation reveals that we can infer the shape of voters' utility functions from the sign of the marginal effect of the government lottery's variance, $Var[L_{i,j}^G]$, on its expected utility, $E[u(L_{i,j})]$. This way, we can learn about voters' risk preferences without making further functional form assumptions. This marginal effect turns out to be (the full mathematical derivation can be found in SM A.1)

$$\frac{\mathrm{d}E[u(L_{i,j})]}{\mathrm{d}Var[L_{i,j}^G]} \approx \frac{1}{2}\pi_{i,j}^2 u''(E[L_{i,j}]). \tag{4}$$

If this marginal effect is negative, voter i is risk-avers, because risk-aversion implies a concave Bernoulli utility function and hence $u''(\cdot) < 0$. If this marginal effect is positive, voter i is risk-seeking, because risk-seeking implies a convex Bernoulli utility function and hence $u''(\cdot) > 0$. If this marginal effect is equal to zero, voter i is risk-neutral, because risk-neutrality implies a linear Bernoulli utility function and hence $u''(\cdot) = 0$.

It is important to see that $\pi_{i,j}$, the perceived probability that party j governs at all, has an influence on this marginal effect. The absolute value of the marginal effect of $Var[L_{i,j}^G]$ on $E[u(L_{i,j})]$ increases with $\pi_{i,j}$. If $\pi_{i,j} = 0$, i.e., voter i expects party j to end up in opposition for sure, then the variance of the government lottery has no effect on the voter's expected utility.

How does the perceived variance of a party's government lottery affect voters expected utility derived from voting for this party? We can exploit this observable implication (see Equation 4) as follows: If the marginal effect of voters' perceived variance is neg-

ative (positive; zero), we can infer that the average voter is risk-averse (risk-seeking; risk-neutral) — and this inference is valid without making further functional form assumptions about the shape of the utility function. The research design presented in the next section takes advantage of this by regressing the perceived variance of a party's government lottery on the expected utility derived from voting for this party in the upcoming election. The sign of the respective estimated marginal effect provides a direct test of whether a typical voter is risk-averse, risk-seeking or risk-neutral.

4.2 Research Design

Our strategy in the last section is to derive a clear implication when we should see risk aversion in observational data analysis. To evaluate it, we regress voters' perceived variance of a party's government lottery on the expected utility derived from voting for this party in the upcoming election. The estimated sign of the respective regression coefficient (hence, the marginal effect) provides a direct test about the average voters' risk preference without having to make any functional form assumption about how voters derive utility from perceived government payoffs. In order to construct measures of voters' perceived variance of a party's government lottery, according to our theory of coalition-directed voting as a lottery, we need to capture voters' perception of government lotteries, i.e., we need survey measure about how likely voters perceive certain coalition governments to govern and which payoff this would imply.

We draw on a broad set of different surveys and leverage data from 17 pre-election studies out of 13 election campaigns in seven countries with coalition governments (Austria, Belgium, Germany, Netherlands, New Zealand, Spain, Sweden) that include the necessary measures to assess voters' perceptions of government lotteries in order to assess risk preferences of voters with respect to coalition-directed voting. These are survey data that include comprehensive measures of perceived government payoffs, perceived

government probabilities, and relevant confounders.[3]

The key independent variable of our analysis is the perceived variance of a party's government lottery ($Var[L_{i,j}^{G}]$ in (4)). We compute respondent i's perceived variance of party j's government lottery in the following way. For the different government options g_{j_k} of party j, we need measures of respondent i's perceived payoffs, $G_{i,g_{j_k}}$, and perceived probabilities, $\gamma_{i,g_{j_k}}$. As a measure for perceived government payoffs, $G_{i,g_{j_k}}$, we use typical survey questions that asked respondents to evaluate different coalitions as government options of party j on like-dislike scales (so-called coalition scalometers). To measure perceived government probabilities, we use survey questions that ask respondents to indicate their perceived probability of party j entering different government options.[4] Where available, we used questions that ask about the perceived probabilities that party j would enter different governments *conditional on being in the government at all*.[5] These conditional probabilities are closer to what constitutes the government probabilities defined in the theory section. We normalize the reported probabilities by applying the standard exponential function to each reported probability and dividing each of them by the sum of all these exponentials. As it is known from the multinomial model, this guarantees that each perceived probability lies within the interval $[0, 1]$ and that $\sum_k \gamma_{i,g_{j_k}} = 1$. We then calculate respondent i's perceived mean of party j's government lottery, $\mu_{i,j}$, by computing $\mu_{i,j} = \sum_k \gamma_{i,g_{j_k}} G_{i,g_{j_k}}$. Finally, we calculate respondent i's perceived variance of party j's government lottery, $\sigma_{i,j}^2$, by computing $\sigma_{i,j}^2 = \sum_k (G_{i,g_{j_k}} - \mu_{i,j})^2 \gamma_{i,g_{j_k}}$. We rescaled the perceived mean and variance of party j's government lottery into the 0-1 range, where 0 is the theoretically possible minimum and 1 is the theoretically possible maximum.

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[3]SM B.1 describes our data sources. Two of the surveys were conducted by ourselves to provide the best conceivable measures to test our theory.

[4]Given that we heavily rely on secondary data, the measures we employ differ slightly from study to study. SM B shows also for each survey the question wordings for the coalition government like-dislike scales and for the perceived government probability scales.

[5]Such questions were only included in the primary data we collected, the pre-election surveys we fielded in Sweden 2018 and New Zealand 2020.

The dependent variable of our analysis is the expected utility derived from voting for a party in the upcoming election. Where available, we followed van der Eijk et al. (2006) and used *propensity to vote* questions to directly measure the utility that respondent i derives from party j. We rescaled propensities to vote into the 0-1 range. Where not available, we considered the intended vote choice for a party (1 = yes, 0 = no) as the dependent variable.[6]

Our aim is to draw model-based inference about how the perception of uncertain coalition prospects of a party — reflected by larger perceived variances of the party's government lottery — affects the propensity to vote for this party. For each party under consideration, we run a linear regression of the propensity to vote for the party on σ_j^2, which is the perceived variance of the party's government lottery ($Var[L_{i,j}^G]$). For surveys that did not provide propensities to vote, we run linear probability models, i.e. linear regression of vote choice for the party on σ_j^2.[7]

We control for μ_j, i.e., the perceived mean of the party's government lottery ($E[L_{i,j}^G]$) because it is a confounder. μ_j directly affects σ_j^2 as well as the dependent variable (see Equation 7 in SM A.1 for why we expect the perceived lottery mean to affect our dependent variable). Also, individual partisan misperceptions could confound the effect of interest. This is because coalition expectations (and thus perceived government lottery variances) can be distorted by party evaluations in terms of "wishful thinking" (Meffert et al., 2011). Therefore, we control for party evaluations, which we measure analogous to coalition evaluations with traditional like-dislike scales.[8] We further control for gender, age, and education because they directly influence our dependent variable and, thus, allow us to estimate our quantity of interest, the marginal effect of σ_j^2, more precisely.

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[6]Propensities to vote for a party in the upcoming election were only asked for in the self-conducted surveys from both Sweden 2018 and New Zealand 2020. SM B shows the wording of the corresponding questions.

[7]For the linear probability models we use heteroskedasticity-consistent standard errors.

[8]In some surveys, like-dislike scales for parties were not available. In these cases, we instead added two control variables: (1) the squared distance of left-right party placement and self-placement, as well as (2) the party leader rating. SM B indicates for which of the surveys this applies.

| | Dependent variable: PTV for | | |
| | Propensity to vote for | | |
	Moderates *(Sweden 2018)*	SAP *(Sweden 2018)*	Labour *(NZ 2020)*
Government Lottery Variance (σ_j^2)	-0.127***	-0.256***	-0.242**
	(0.039)	(0.062)	(0.095)
Government Lottery Mean (μ_j)	0.163***	0.157***	0.428***
	(0.023)	(0.023)	(0.062)
Controls	Yes	Yes	Yes
Observations	1,736	1,734	426
R^2	0.696	0.691	0.715

Table 1: Linear regressions of propensities to vote on perceived government lottery variance and mean. We control for the party evaluation as well as gender, age, and education. Standard errors are in parentheses, alongside the p-value (*p<0.1; **p<0.05; ***p<0.01). The full table is in SM B.2.12.

4.3 Results

The analysis of survey data provides evidence for risk-aversion of voters when it comes to coalition-directed voting. We first illustrate this for our primary data. Table 1 shows the results of the linear regressions of propensities to vote on perceived government lottery variance while controlling among others for the perceived government lottery mean. The results indicate that on average the propensity to vote for a party is significantly negatively affected by the uncertainty of the party's coalition prospects. Thus, the results indicate that typical voters of those parties are risk-averse because the marginal effects are negative. This applies consistently to all three parties considered: the Moderate Party and the Social Democratic Party in the context of the 2018 Swedish parliamentary elections, as well as the Labour Party in the 2020 New Zealand general election.

The size of the estimated effects of the perceived government lottery variance are sizable. On average and holding everything else constant, increasing the variance of a government lottery from 0 — which mimics the situation where the party entered into a pre-election coalition — to 1 — which mimics the situation where the party could join

a highly desirable coalition and a highly undesirable coalition with equal probability — reduces the propensity to vote for the Swedish Social Democratic Party by 0.256 (0.127 for Swedish Moderate Party; 0.242 and New Zealand Labour Party) points on a 0 to 1 scale. Thus, the estimated effect corresponds to a change of about 25% of the range of the dependent variable, for the Swedish Social Democratic Party and the New Zealand Labour Party while to about half of it for the Swedish Moderate Party even when holding everything else constant. While substantively relevant, the negative effect of the variance also suggests that expected-utility-maximizing voters seem to have a concave Bernoulli utility function. They behave risk-averse in the context of coalition-directed voting and, thus prefer more clarity in the coalition prospects.

In the second step of our analysis, we evaluate the same relationship for all the parties we have the necessary data for across 17 surveys from 13 election campaigns. We report the results in more detail in SM B.2. Overall, in 22 of the models, we obtain evidence that voters are on average risk-averse, with significantly negative regression coefficients for the government lottery variance (σ_j^2). These models show that the propensity (or, respectively, the probability) to vote for a party is significantly negatively affected by the uncertainty of the party's coalition prospects. Only three of the models suggest risk-seeking as indicated by the significantly positive variance coefficient. The variance coefficients of the remaining models are not statistically significantly different from zero on conventional levels. This insignificance does not necessarily imply risk-neutrality: On the one hand, the effects of risk-averse and risk-seeking voters could cancel out as our observable implications only tests the effect for average voters. On the other hand, as derived in section 4.1, a non-significant marginal effect of the government lottery variance σ_j^2 could also indicate that the perceived probability of a party entering government at all is considered low by the average voter – which does not allow drawing conclusions about the nature of voters' risk preferences.

We analyze all estimated models together in a meta-analysis to provide an overall
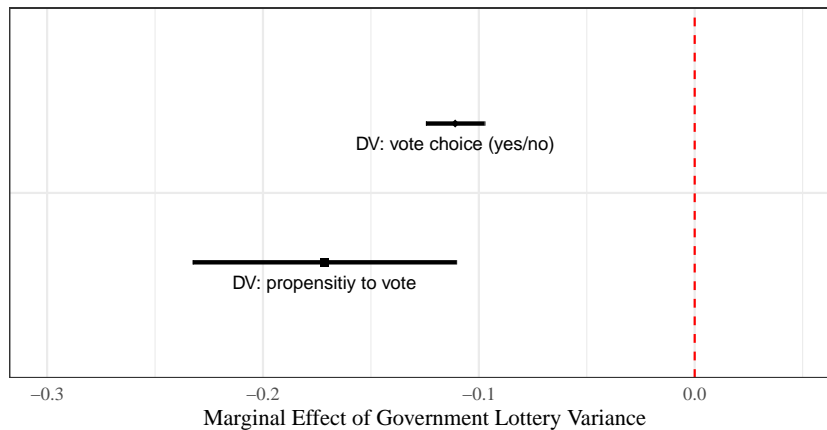
Figure 3: Meta-analysis estimates are based on inverse variance weighting (Rice et al., 2018) from models for all survey data sources. Intervals display 95% confidence intervals. See SM B for the single studies' regression tables and SM B.2.13 for the meta analysis' regression table.

picture of voters' risk preferences across all studies. We use the established inverse variance weighting (Rice et al., 2018) to combine the estimates from models for all survey data sources. Figure 3 shows the results of this synthesis of the results. We compute two averaged quantities - one for the models with propensities to vote as the dependent variable and one for the linear probability models. The weighted average of the estimates derived from the linear probability models is of size -0.111 and significantly different from zero at conventional levels. Substantively, this means that increasing the variance of a government lottery from minimum to maximum, while holding everything else constant, reduces the probability to vote for the party by 11.1 percentage points on average. The weighted averaged quantity for those models using propensities to vote as dependent variable is of size -0.172 and also significantly different from zero at the conventional levels. Substantively, this means that increasing the variance of a government lottery from minimum to maximum, while holding everything else constant, reduces the propensity to vote for the party by 0.172 points on the rescaled interval from 0 to 1. Thus, the results of the meta-analysis provide clear evidence that the average voter is risk-avers when it comes to coalition-directed voting.

5 Experimental Evidence

In this section, we present results from an experimental vignette study. In contrast to the observational study we present respondents with randomized scenarios with different lottery variance but hold constant the mean to test whether the lack of clarity about coalition government prospects and, hence, an increase in variance in the government lottery, is also causally related to vote choice and does reduce the propensity to vote for such a party. By taking advantage of the concept of the mean-preserving spread, we manipulate the perception of coalition lotteries and assure that our findings in the previous section are not due to unobserved confounding.

5.1 Observable Implication: Mean-preserving Spreads

In addition to the mean-variance approach discussed above, there is another way to infer voters' risk preferences without making assumptions about the functional form of Bernoulli utility $u(\cdot)$. We make use of the concept of a mean-preserving spread. Consider the hypothetical situation in which a voter could decide between two post-election lotteries $L_{i,j}$ and $L_{i,j}^*$ for a party j, where both lotteries have the same expected value such that $E[L_{i,j}] = E[L_{i,j}^*]$. Lottery $L_{i,j}^*$ is called a *mean-preserving spread* of $L_{i,j}$ if, simply put, we can construct lottery $L_{i,j}^*$ out of lottery $L_{i,j}$ by reducing the probability of government outcomes with medium payoff and increasing the probability of government outcomes with extreme payoff (i.e. with very small and very large payoff), while not changing the expected value of lottery $L_{i,j}$ (see for a formal definition in SM A.2). Hence, if $L_{i,j}^*$ is a mean-preserving spread of $L_{i,j}$ then its variance is larger (i.e., $Var[L_{i,j}^*] > Var[L_{i,j}]$).

Mean-preserving spreads of a lottery are helpful to generate yet another observable implication to infer the nature of voters' risk preferences. Without making assumptions about the functional form of the utility function, we can directly deduce risk preferences if we could observe a voter's choice between a lottery $L_{i,j}$ and its mean-preserving spread

$L_{i,j}^*$. If she chooses $L_{i,j}$ and, hence, opts for more certainty, $u(\cdot)$ is concave, which implies risk-aversion. If she chooses $L_{i,j}^*$ and values the additional opportunities, $u(\cdot)$ is convex, which implies risk-seeking. If she is indifferent between the lotteries, $u(\cdot)$ is linear, which implies risk-neutrality. We provide an example of a mean-preserving spread of a government lottery in SMA.2.3.

The observable implications of mean-preserving spreads open up the possibility for experimental designs. Experiments can rely on the general construction rules for mean-preserving spreads of a party's government lottery, and measure voters' expected utilities under different lotteries. The experiment we present in the next section implements this idea and creates a mean-preserving spread of the party's government lottery for each respondent, while holding constant its opposition lottery and the probability that the party will govern at all (see SM A.2 for details on this strategy). For each of the party's post-election lottery, we will then ask individuals to indicate their propensity to vote for the party in the light of these coalition prospects to isolate the causal effect of increasing variance in government lotteries on the propensity to vote for a party.

5.2 Research Design

We field a survey for studying the role of risk preferences in coalition-directed voting decisions during the 2021 German federal election. The survey contains two within-subject experiments that allow us to test the hypothesis that voters are on average risk-averse when considering coalition government options. The survey includes pre-treatment measures of sociodemographic characteristics and political orientations.[9]

We then introduce the general theme of the experiment: "After the federal election, there will probably be a coalition government" and ask respondents about their opinion of different coalition governments for the CDU/CSU first, and later for the Greens. Pre-treatment, we let them rate various coalition options of the CDU/CSU, on a scale

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[9]For a complete list of the items in the survey, please refer to the supplementary material (SM C.7).

from -5 to +5.[10] The survey includes such ratings of seven two-party and three-party government constellations. Consistent with the observational study in the last section, we use the same scale to measure coalition government payoffs. Afterward, we ask respondents about the probabilities that a party will end up in a certain government coalition, i.e., their perceived government probabilities. "Suppose the CDU/CSU is part of the next government. In which coalition government is the CDU/CSU likely to be part of?" The scale ranges from 0 (very unlikely) to 10 (very likely). We re-scale the question by dividing each answer by the sum of all answers and use the respective values as our measure of perceived government probabilities. Then, we ask respondents about their general propensity to vote for the CDU/CSU on a scale from 0 (very unlikely) to 10 (very likely).

For the experiment, we choose three randomized vignettes to describe different scenarios. A sentence introduces the three vignettes to respondents: "Below we present three different situations. We will ask you each time how likely it is that you would vote for the CDU/CSU." A detailed explanation of how to understand the probabilities follows the introduction. The three scenarios are calculated conditional on respondents' previous answers to the coalition government payoffs such that the three coalition lotteries are mean-preserving spreads (see Section 5.1). For this, we automatically choose three CDU/CSU coalition governments for each respondent: the coalition government with the lowest respondent evaluation, one with medium evaluation, and the one with the highest evaluation.[11] The set of coalition governments that are part of the experiment varies between respondents.[12]

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[10]The wording of the question is: "Regardless of the outcome of the Bundestag election, how desirable do you personally consider the following coalition governments?".

[11]We found the coalition with medium evaluation by selecting the coalition with the median (lower median) evaluation. If there were several coalitions to which this criterion applied, we selected one at random. Also, if there was more than one coalition that received the worst (best) rating, one of these coalitions was selected at random.

[12]In some unlikely cases, it is not possible to choose three separate coalition governments, as respondents do not provide three distinct coalition government evaluations. We have to exclude those respondents, 11% for the CDU/CSU and 20% for the Greens, from the experiment.

The first vignette presents a scenario in which only the medium coalition government is feasible due to the coalition signals of the party. "Imagine that the CDU/CSU says that after the election it will only enter into one coalition with [Coalition with medium rating] and that it will rule out all other coalitions." It assigns 100% to the probability of the medium coalition. The first vignette thereby presents a scenario with a certain coalition lottery, in which voters know what coalition government a party could end up in. The second vignette puts weight on the lowest and highest rated coalition government while preserving the expected government payoff.[13] This scenario is introduced, "Now imagine if the CDU/CSU did not clearly state which coalition they would like to join after the election." The third vignette puts even more weight on the lowest and highest rated coalition government, such that only a 1% chance for the medium remains.[14] The scenarios, thereby, present ever more uncertain coalition lotteries and allow us to directly estimate the effect of uncertainty on voting propensities, holding the expected coalition government payoffs constant.[15]

This within-subject design is repeated with the Green party. We choose the Green party next to the CDU/CSU as early in the campaign (and during the field time) the Greens were perceived as the main competitor and closest to the CDU/CSU in the polls. The survey asks about five Green coalition governments and afterward presents

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[13]In the second vignette, we calculated the probabilities for the lowest rated coalition, $\gamma_{i,low}^{(2)}$, for the medium rated coalition, $\gamma_{i,med}^{(2)}$, and for the highest rated coalition, $\gamma_{i,high}^{(2)}$, according to the following formulas: $\gamma_{i,low}^{(2)} = \frac{G_{i,med} - G_{i,high}}{G_{i,low} - G_{i,high}} \frac{1}{2}$, $\gamma_{i,high}^{(2)} = \frac{\gamma_{i,low}^{(2)} (G_{i,low} - G_{i,med})}{G_{i,med} - G_{i,high}}$, and $\gamma_{i,med}^{(2)} = 1 - (\gamma_{i,low}^{(2)} + \gamma_{i,high}^{(2)})$. $G_{i,low}$, $G_{i,med}$, and $G_{i,high}$ are the evaluations of the lowest rated, medium rated, and highest rated coalitions, respectively. These probabilities ensured that the government lottery displayed in the second vignette is a mean-preserving spread of the government lottery displayed in the first vignette.

[14]In the third vignette, we calculated the probabilities for the lowest rated coalition, $\gamma_{i,low}^{(3)}$, for the medium rated coalition, $\gamma_{i,med}^{(3)}$, and for the highest rated coalition, $\gamma_{i,high}^{(3)}$, according to the following formulas: $\gamma_{i,low}^{(3)} = \frac{G_{i,med} - G_{i,high}}{G_{i,low} - G_{i,high}} \frac{99}{100}$, $\gamma_{i,high}^{(3)} = \frac{\gamma_{i,low}^{(3)} (G_{i,low} - G_{i,med})}{G_{i,med} - G_{i,high}}$, and $\gamma_{i,med}^{(3)} = 1 - (\gamma_{i,low}^{(3)} + \gamma_{i,high}^{(3)})$. $G_{i,low}$, $G_{i,med}$, and $G_{i,high}$ are the evaluations of the lowest rated, medium rated, and highest rated coalitions, respectively. These probabilities ensured that the government lottery displayed in the third vignette is a mean-preserving spread of both the government lottery displayed in the second vignette and the one shown in the first vignette.

[15]SM C.5 describes that the pretest results of an open question indicating that there were no systematic issues in comprehending the vignettes.

the three selected coalition lotteries for each respondent. The selection and calculation process for the coalition governments in the vignettes is the same as for the CDU/CSU. The experiment with the Greens might be compromised by the fact that towards the end of the campaign it became clear that the social democrats are the main competitor of the CDU/CSU. The social democrats in the end also became the largest party on the election day 26th of September.

The survey experiment and the analysis are pre-registered.[16] We recruit 1577 respondents from the online-access panel RespondI with quotas based on age, gender and region (see SM C.2). The survey field time was between the 10th of August and the 7th of September 2021. The median response to the survey took around 6 minutes, for which respondents received compensation from the panel provider.

5.3 Results

The first hypothesis is that average voters are risk-averse. For the experimental study, this implies that respondents are more likely to vote for a party if the variance of the party-specific coalition lottery is lower compared to a scenario in which this variance is higher, holding constant the mean of the party-specific coalition lottery. Hence, we should observe higher support under the certain coalition scenarios, compared to the uncertain coalition scenarios.

The results support the notation that voters are risk-averse when considering the coalition government options of the CDU/CSU. Figure 4 shows a negative treatment effect of the uncertain and very uncertain coalition lotteries compared to certain coalition government prospects. The effect is with around 1/4 scale point is comparable between the uncertain (-.23) and very uncertain coalition option (-0.27) while we can reject the null hypothesis for both. Our results imply that respondents systematically evaluate the CDU/CSU higher if the party signals which coalition government it intends to form.

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[16]Please see an anonymous version of the PAP in SM C.7. We discuss ethical consideration in SM C.1.
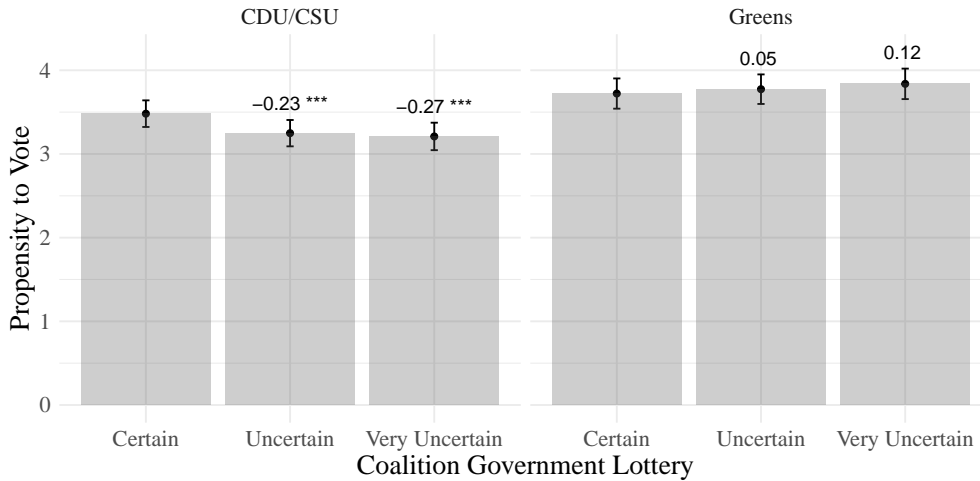
Figure 4: Average propensity to vote for the CDU/CSU and the Green Party for the different scenarios, with 95% confidence intervals. The values show treatment effects of the uncertain and very uncertain condition compared to the certain condition, alongside their p-value (***$p < 0.001$; **$p < 0.01$; *$p < 0.05$). The regression table for the treatment effects is in SM C.4.

We do not find a difference between the uncertain and very uncertain coalition lottery, although we would have expected it for risk-averse voters.[17] For the Greens, we do not find a clear difference between the three scenarios. SM C.4 provides the regression tables and shows that this pattern also holds when using two pre-registered alternative modelling strategies controlling for respondent and scenario-specific fixed effects.[18]

One reason why we do not observe significant treatment effects for the Greens but for the CDU/CSU could be the fact that the respondents' perceived probability that the CDU/CSU enter government at all was higher that the probability that the Greens enter government at all. When most of our respondents participated in the survey, the

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[17]One concern with these estimates is that the observed decrease is primarily due to strong dislike of any coalition with the AfD, not risk-aversion per se. A coalition including the AfD is indeed the least preferred government option in the vignettes for many subjects. In SM C.6 we show that we still observe negative treatment effects when we exclude subjects for whom the AfD was the least preferred government option in the vignettes for the CDU/CSU.

[18]In SM C.5, we further confirm that the effects for the CDU/CSU are particular pronounced among respondents, for whom the vignette's probabilities does not deviate strongly from prior expectations. This provides some evidence that the vignette particular induced treatment effects, when it was credible.

CDU/CSU was the strongest party according to the polls. According to the perceived government probabilities presented in Debus (2022, third scenario), the probability that there would be a government with CDU/CSU participation was about 87.2% to 89.2%, while the same probability for the Greens was only about 58.2% to 59.2%.

As part of the pre-registered experiment plan, we also evaluate whether the patterns are influenced by the risk preferences of the respondents. It could be that risk-averse coalition-directed voting is particularly pronounced among respondents that indicate that they are generally willing to take risks. For respondents that indicate that they are very willing to take a risk, we could even observe risk-seeking behavior.[19] SM C.3 reveals some patterns that underline that the relationship is related to general risk preferences. For the Greens, we indeed find that respondents with high-risk preferences are risk-seeking, as both an uncertain and a very uncertain coalition lottery increase their propensity to vote for the Greens. But not all expectations in this analysis confirm the conditional hypothesis, e.g., we find no effects for the Greens among respondents with low-risk preferences and even some negative significant effects for respondents that are willing to seek risks for the CDU/CSU. Nonetheless, the results point in a direction that general risk preferences can matter in this regard and confirm the idea that is truly about the uncertainty that originates from the different scenarios.

We also assess an additional pre-registered hypothesis, according to which the treatment effect might be conditional on the initial propensity to vote for the parties. Only respondents who have some propensity to vote for the parties consider their coalition government options and, hence, react negatively to more uncertain coalition lotteries. We find some support for the hypothesis for respondents with a middle-level propensity to vote for the two parties. SM C.3 shows a decay of voting propensities over the three scenarios for the CDU/CSU for respondents with a middle-level propensity to vote. The difference between the certain and uncertain conditions is 0.4 scale points, for the very

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[19]We use a standard survey question to ask about risk preferences for the respondents.

uncertain condition it is a bit larger with 0.54 scale points.

To sum up, we find evidence consistent with our pre-registered hypotheses that voters are risk-averse when considering the coalition government options of the CDU/CSU. Respondents have systematically a higher propensity to vote for the CDU/CSU higher *because* the party signals which coalition government it intends to form and, hence, reduces the lack of clarity about coalition government prospects.

6 Discussion

In this paper, we show that on average, voters are risk-averse when it comes to the uncertainty that arises from coalition governments. Based on expected utility theory we identify conditions under which we expect risk preferences to influence voting decisions and evaluate them in observational survey research and an experimental study. The results show that even when holding the expected payoff from coalition government outcomes constant, voters prefer more certain outcomes.

Our fundamental research has important implications for understanding accountability in systems where voters do not choose their party-governments directly. It shows that the uncertainty that originates from these electoral intuitions negatively weighs on voters' evaluations of parties, and calls for informal institutions to reduce this type of uncertainty.

These findings inform our understanding of party competition and under what conditions parties should signal coalitions already before the election. For parties, it should pay off to send signals to reduce uncertainty in their coalition prospects, when they meet a risk-averse electorate. However, coalition signals can be a double-edged sword, as they decrease uncertainty, but also influence what coalition payoffs voters expect to get from the party. Coalition signals change the expected coalition payoffs, which can have positive or negative electoral effects, depending on voters' average evaluation of the coalition option. In this regard, signaling popular coalitions should have a doubling effect on the

electoral support for a party because it increases clarity of the coalition prospects and boosts the average expectations of government payoffs from the party. Hence, if popular coalition options are feasible, parties should have clear incentives to signal them already before the election.

Conceptualizing coalition-directed voting as a lottery has also implications for strategic voting. Voters can cast a strategic vote in our model, i.e. they deviate from their most preferred party, if either they evaluate potential coalition prospects of their most preferred party rather low or because of the uncertainty about these prospects. In previous models of strategic voting in proportional systems, strategic voting has been explained by voters who rent out their vote to influence the coalition composition of the government coalition (e.g. Bargsted and Kedar, 2009; Meffert and Gschwend, 2010), affect policy weights in the parliamentarian outcome (Kedar, 2005), or help a potential coalition partner to overcome a national threshold (e.g., Fredén, 2017; Gschwend, 2007; Gschwend et al., 2016; Meffert and Gschwend, 2010). In this perspective, strategic voting is due to the fact that voters want to signal their preference for a certain government or policy outcome and are willing to give up their vote for the most preferred party for this aim. The idea of our model deviates from this: Strategic voting happens simply because a voter find the government prospects of their preferred party rather unappealing.

Furthermore, our theory can provide insights into the effects of the pre-electoral identifiability of coalition governments at the system-level. Our decision-theoretic model builds on perceived coalition probabilities versus rational expectations. For system-level implications of our theory on party competition, one can use rational expectation and assume that the perceptions are on average right. In this regard, coalition-inclusion probabilities might prove helpful (Kayser et al., 2022).

Finally, our paper brings about clear avenues for extension and further research. Our model builds on expected utility theory, but the psychological and economic literature discusses alternative theories on how decision-makers deal with uncertainty. Some of

these might turn out to be fruitful to further understanding how voters deal with the uncertainty that originates from coalition government options. As an example, prospect theory would allow for higher weights of coalitions with actually small probabilities. This might be quite sensible when voters consider and weigh unlikely coalitions, for instance, a coalition between the right-wing populist AfD and CDU/CSU in our experiment, more strongly than the measured perceived probability would suggest.

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Supplementary Material

Coalition-directed Voting as a Lottery

Table of Contents

A Mathematical Derivations

A.1 Mean-Variance Approximation

In order to infer about voters' risk preferences from observational data, we make use of the mean-variance approach originating from financial economics and mathematical finance (Markowitz, 1952). We first approximate expected utility $E[u(L_{i,j})]$ by a function of the mean of the post-election lottery, $E[L_{i,j}]$, and the variance of the post-election lottery, $Var[L_{i,j}]$. This is done by a second-order Taylor-series approximation of $u(L_{i,j})$ at the mean of the government lottery, $E[L_{i,j}]$ (Levy and Markowitz, 1979), providing us with the following expression:

$$u(L_{i,j}) \approx u(E[L_{i,j}]) + (L_{i,j} - E[L_{i,j}])u'(E[L_{i,j}]) + \frac{1}{2}(L_{i,j} - E[L_{i,j}])^2 u''(E[L_{i,j}]) \quad (5)$$

Taking the expected value of this approximation directly yields the following approximation for expected utility $E[u(L_{i,j})]$:[20]

$$E[u(L_{i,j})] \approx u(E[L_{i,j}]) + \frac{1}{2}E[(L_{i,j} - E[L_{i,j}])^2]u''(E[L_{i,j}]) \quad (6)$$

$$\approx u(E[L_{i,j}]) + \frac{1}{2}Var[L_{i,j}]u''(E[L_{i,j}]) \quad (7)$$

Taking into account that post-election lottery $L_{i,j}$ is a compound lottery of the opposition lottery $L_{i,j}^O$ and the government lottery $L_{i,j}^G$ with $L_{i,j} = \pi_{i,j}L_{i,j}^G + (1 - \pi_{i,j})L_{i,j}^O$, we get

$$E[u(L_{i,j})] \approx u(E[\pi_{i,j}L_{i,j}^G + (1 - \pi_{i,j})L_{i,j}^O])$$
$$+ \frac{1}{2}Var[\pi_{i,j}L_{i,j}^G + (1 - \pi_{i,j})L_{i,j}^O]u''(E[\pi_{i,j}L_{i,j}^G + (1 - \pi_{i,j})L_{i,j}^O]) \quad (8)$$
$$\approx u(\pi_{i,j}E[L_{i,j}^G] + (1 - \pi_{i,j})E[L_{i,j}^O]) + \frac{1}{2}(\pi_{i,j}^2 Var[L_{i,j}^G] + (1 - \pi_{i,j})^2 Var[L_{i,j}^O]$$
$$+ 2\pi_{i,j}(1 - \pi_{i,j})Cov[L_{i,j}^G, L_{i,j}^O])u''(\pi_{i,j}E[L_{i,j}^G] + (1 - \pi_{i,j})E[L_{i,j}^O]) \quad (9)$$
$$\approx u(\pi_{i,j}E[L_{i,j}^G] + (1 - \pi_{i,j})E[L_{i,j}^O])$$
$$+ \frac{1}{2}(\pi_{i,j}^2 Var[L_{i,j}^G] + (1 - \pi_{i,j})^2 Var[L_{i,j}^O])u''(\pi_{i,j}E[L_{i,j}^G] + (1 - \pi_{i,j})E[L_{i,j}^O]), \quad (10)$$

while $Cov[L_{i,j}^G, L_{i,j}^O] = 0$ because the the opposition lottery and the government lottery do not jointly vary.

Given this mean-variance approximation we can evaluate whether voter i is risk-averse,

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[20]Note that the mean-variance approach and expected utility theory are *exactly* equivalent if Bernoulli utility function $u(\cdot)$ is quadratic, i.e. $u(x) = bx + cx^2$ (see Hanoch and Levy, 1970). In this case, expected utility derived from a lottery is a function of the lottery's mean and variance: $E[u(L_{i,j})] = bE[L_{i,j}] + cE[L_{i,j}^2] = bE[L_{i,j}] + c(E[L_{i,j}]^2 + Var[L_{i,j}])$.

risk-neutral or risk-seeking without knowing the functional form of $u(\cdot)$ and instead considering the marginal effect of the governments lottery's variance on expected utility,

$$\frac{\mathrm{d}E[u(L_{i,j})]}{\mathrm{d}Var[L^G_{i,j}]} \approx \frac{1}{2}\pi^2_{i,j}u''(E[\pi_{i,j}L^G_{i,j} + (1-\pi_{i,j})L^O_{i,j}]) = \frac{1}{2}\pi^2_{i,j}u''(E[L_{i,j}]). \qquad (11)$$

If this marginal effect is negative, voter i is risk-avers, because risk-aversion implies a concave Bernoulli utility function and hence $u''(\cdot) < 0$. If this marginal effect is positive, voter i is risk-seeking, because risk-seeking implies a convex Bernoulli utility function and hence $u''(\cdot) > 0$. If this marginal effect is equal to zero, voter i is risk-neutral, because risk-neutrality implies a linear Bernoulli utility function and hence $u''(\cdot) = 0$.

It is important to see that $\pi_{i,j}$, the perceived probability that party j governs at all, has an influence on this marginal effect. The absolute value of the marginal effect of $Var[L^G_{i,j}]$ on $E[u(L_{i,j})]$ increases with $\pi_{i,j}$. If $\pi_{i,j} = 0$, which means that voter i expects party j to end up in opposition for sure, the effect of $Var[L^G_{i,j}]$ is zero.

A.2 Mean-preserving Spreads

A.2.1 Formal Definition of Mean-preserving Spreads of a Government Lottery

Consider two hypothetical government lotteries $L^G_{i,j}$ and $L^{G}_{i,j}{}^*$, where both government lotteries have the same expected value such that $E[L^G_{i,j}] = E[L^{G}_{i,j}{}^*]$. Also, assume that both government lotteries have the same government payoffs and only differ in their government probabilities, i.e. $L^G_{i,j} = \{\gamma_{i,g_{j_1}}, G_{i,g_{j_1}}; \ldots; \gamma_{i,g_{j_N}}, G_{i,g_{j_N}}\}$ and $L^{G}_{i,j}{}^* = \{\gamma^*_{i,g_{j_1}}, G_{i,g_{j_1}}; \ldots; \gamma^*_{i,g_{j_N}}, G_{i,g_{j_N}}\}$. Lottery $L^{G}_{i,j}{}^*$ is called a *mean-preserving spread* of $L^G_{i,j}$ if, for all $k \in [1, N-1]$, the following inequality holds (see, e.g., Courtault et al., 2006; Mas-Colell et al., 1995, p. 197-199):

$$\sum_{m=1}^{k}\left(\sum_{p=1}^{m}\gamma^*_{i,g_{j_p}} - \sum_{p=1}^{m}\gamma_{i,g_{j_p}}\right)(G_{i,g_{j_{m+1}}} - G_{i,g_{j_m}}) \geq 0. \qquad (12)$$

A.2.2 Strategy to Construct Mean-preserving Spreads of Post-Election Lottery

How can we construct post-election lotteries $L_{i,j} = \pi_{i,j}L^G_{i,j} + (1-\pi_{i,j})L^O_{i,j}$ and $L_{i,j}{}^* = \pi_{i,j}{}^*L^{G}_{i,j}{}^* + (1-\pi_{i,j}{}^*)L^{O}_{i,j}{}^*$ such that $L^*_{i,j}$ is a *mean-preserving spread* of $L_{i,j}$? We employ the following strategy: $L^{G}_{i,j}{}^*$ has to be a mean-preserving spread of $L^G_{i,j}$, while the opposition lotteries of both post-election lotteries have to be the same ($L^{O}_{i,j}{}^* = L^O_{i,j}$) and the probability that party j enters government at all have to be the same in both post-election lotteries ($\pi_{i,j}{}^* = \pi_{i,j}$).

Assuming that we have constructed lotteries $L_{i,j}$ and $L^*_{i,j}$ as described above, how do we know that $L^*_{i,j}$ is indeed always a *mean-preserving spread* of $L_{i,j}$? In order to show that $L_{i,j}{}^*$ is a mean-preserving-spread of $L_{i,j}$, we need to show that (1) $L_{i,j}{}^*$ and $L_{i,j}$ have the same mean and that (2) risk-averse voters prefer $L_{i,j}$ over $L_{i,j}{}^*$.

The first part of the proof is to show that $L_{i,j}{}^*$ and $L_{i,j}$ have the same mean. Because the mean is linear in probabilities and $E[L_{i,j}^G] = E[L_{i,j}^{G}{}^*]$ as mean-preserving spread, the following expression holds:

$$E[L_{i,j}] = \pi_{i,j}E[L_{i,j}^G] + (1 - \pi_{i,j})E[L_{i,j}^O] \tag{13}$$

$$= \pi_{i,j}E[L_{i,j}^{G}{}^*] + (1 - \pi_{i,j})E[L_{i,j}^O] \tag{14}$$

$$= E[L_{i,j}{}^*]. \tag{15}$$

The second part of the proof is the show that a risk-averse voter i prefers $L_{i,j}$ over $L_{i,j}{}^*$, i.e. $E[u(L_{i,j})] > E[u(L_{i,j}{}^*)]$. Because expected utility is linear in probabilities and $E[u(L_{i,j}^G)] > E[u(L_{i,j}^{G}{}^*)]$ as mean-preserving spread of the respective government lottery, the following expression holds:

$$E[u(L_{i,j})] = \pi_{i,j}E[u(L_{i,j}^G)] + (1 - \pi_{i,j})E[u(L_{i,j}^O)] \tag{16}$$

$$> \pi_{i,j}E[u(L_{i,j}^{G}{}^*)] + (1 - \pi_{i,j})E[u(L_{i,j}^O)] \tag{17}$$

$$= E[u(L_{i,j})] \tag{18}$$

Hence, $L_{i,j}{}^*$ is a mean-preserving-spread of $L_{i,j}$ if $L_{i,j}^{G}{}^*$ is a mean-preserving-spread of $L_{i,j}^G$ and, additionally, $L_{i,j}^{O}{}^* = L_{i,j}^O$ and $\pi_{i,j}{}^* = \pi_{i,j}$ holds. However, there is a condition for this to hold: We must assume that $\pi_{i,j} > 0$, i.e., voter i does not expect with certainty that party j will end up in opposition, otherwise Equation (17) does not follow from Equation (16).

A.2.3 Example of Mean-preserving Spreads of Government Lotteries
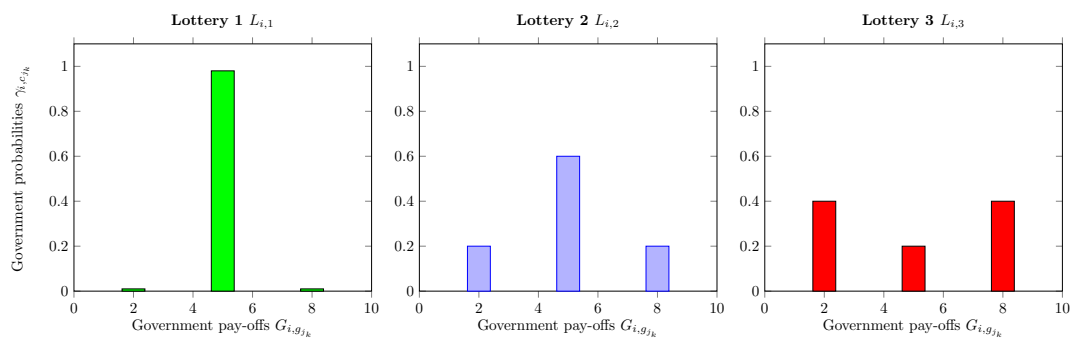
Figure SM1: Example of mean-preserving spread of Government Lottery

Figure SM1 shows three government lotteries. The lotteries contain three government outcomes with payoffs 2, 5, and 8. They are fixed in all three lotteries. The probabilities for the government outcomes change for the three lotteries. Comparing lottery 1 with lottery 2, the probabilities for a low and high payoff government outcomes increase and

the middle government outcome decreases. Moving from lottery 2 to lottery 3, the probabilities for a low and high payoff government outcomes increase even further, again while decreasing for the middle category. This makes lottery 2 a mean-preserving spread of lottery 1, and lottery 3 of lottery 2.

In the example, the way to construct the mean-preserving lotteries holds the expected payoffs constant, while increasing the variance of the payoffs. This permits to isolate the effect of risk-preferences when deciding between the three lotteries.

B Observational Study

B.1 Survey Data

We leverage two primary and 15 different secondary data sources to provide observational evidence when testing the first observable implication we derive from our theory using the mean-variance approximation.

B.1.1 Primary Data Sources

The first self-conducted survey polled Swedish citizens during the 2018 Swedish parliamentary election campaign. The survey was fielded between June 12 and August 6, 2018, within the online panel of the Laboratory of Opinion Research (LORE) at the University of Gothenburg and included responses from a total of 1,907 respondents. In this survey, respondents answered questions about the various post-electoral government options of the Swedish Social Democratic Party and the Swedish Moderate Party, including the respondents' evaluations and perceived probabilities for these government options.

We fielded the second self-conducted survey during the 2020 New Zealand general election campaign. Between October 8 and October 14, 2020, we recruited 458 respondents through Consumer Link's online panel. As part of the survey, we asked respondents about the government options the New Zealand Labour Party was likely to have after the election. Specifically, we asked respondents to state their evaluations and perceived probabilities for the government options of this party.

B.1.2 Secondary Data Sources

We were happy to compile 15 different studies that include necessary measures for our analysis. For Austria, we identified several relevant components from the Austrian National Election Study (AUTNES): the AUTNES Rolling Cross Section Panel 2013 (Kritzinger, Johann, Aichholzer, Glinitzer, Glantschnigg, Oberluggauer, Thomas, Wagner, and Zeglovits, 2020), the AUTNES Pre-Panel 2013 (Kritzinger, Zeglovits, Aichholzer, Glantschnigg, Glinitzer, Johann, Thomas, and Wagner, 2020) (all in the context of the Austrian legislative election in 2013), the AUTNES Online Panel Wave 4 (Aichholzer et al., 2020), the AUTNES Multi-Mode Panel (Kritzinger et al., 2018) (all Austrian legislative election in 2017), and the AUTNES Online Panel Wave 11 (Aichholzer et al., 2020) (Austrian legislative election in 2019). For Belgium, we identified

the Belgian National Election Study (BNES) of 2014 (Bol et al., 2017). For Germany, we draw on different components of the German Longitudinal Election Study (GLES): the GLES Pre-election Cross Section 2009 (GLES, 2020) (German legislative election in 2009), the GLES Pre-election Cross Section 2013 (GLES, 2020), the GLES Longterm-Online-Tracking 2013 (GLES, 2019) (all German legislative election in 2013), the GLES Longterm-Online-Tracking 2017 (GLES, 2019), GLES Panel 2016-2021, Wave 7 (GLES, 2021) (all German legislative election in 2017), the GLES Panel 2016-2021, Wave 21 (GLES, 2021) (all German legislative election in 2021). For the Netherlands, we identified the Dutch Parliamentary Election Study 2006 (CBS et al., 2007). For Spain, we use the Spanish National Election Study of 2016 (Lago et al., 2017). For Sweden, we draw on the Swedish National Election Study of 2010 (Blais et al., 2017). We only considered pre-electoral responses of individuals. If there were several waves of a panel prior to an election, we only considered the most recent one.

B.2 Survey Data Evidence

Figure SM2 provides an overview of the estimates in all survey studies. The estimate report on the coefficient estimates for government lottery variance originating from the linear regressions of *propensities to vote* on perceived government lottery variance (squares as point estimates) and of the linear regressions of *vote choice* on perceived government lottery variance (diamonds as point estimates). All models control among others for the perceived government lottery mean. At the bottom, the figure also reports on the results of the meta-analysis using the established inverse variance weighting.

The following subsections provide the regression tables for all models and a description of the survey questions used to measure the dependent variable, coalition scalometer, and perceived government probabilities.
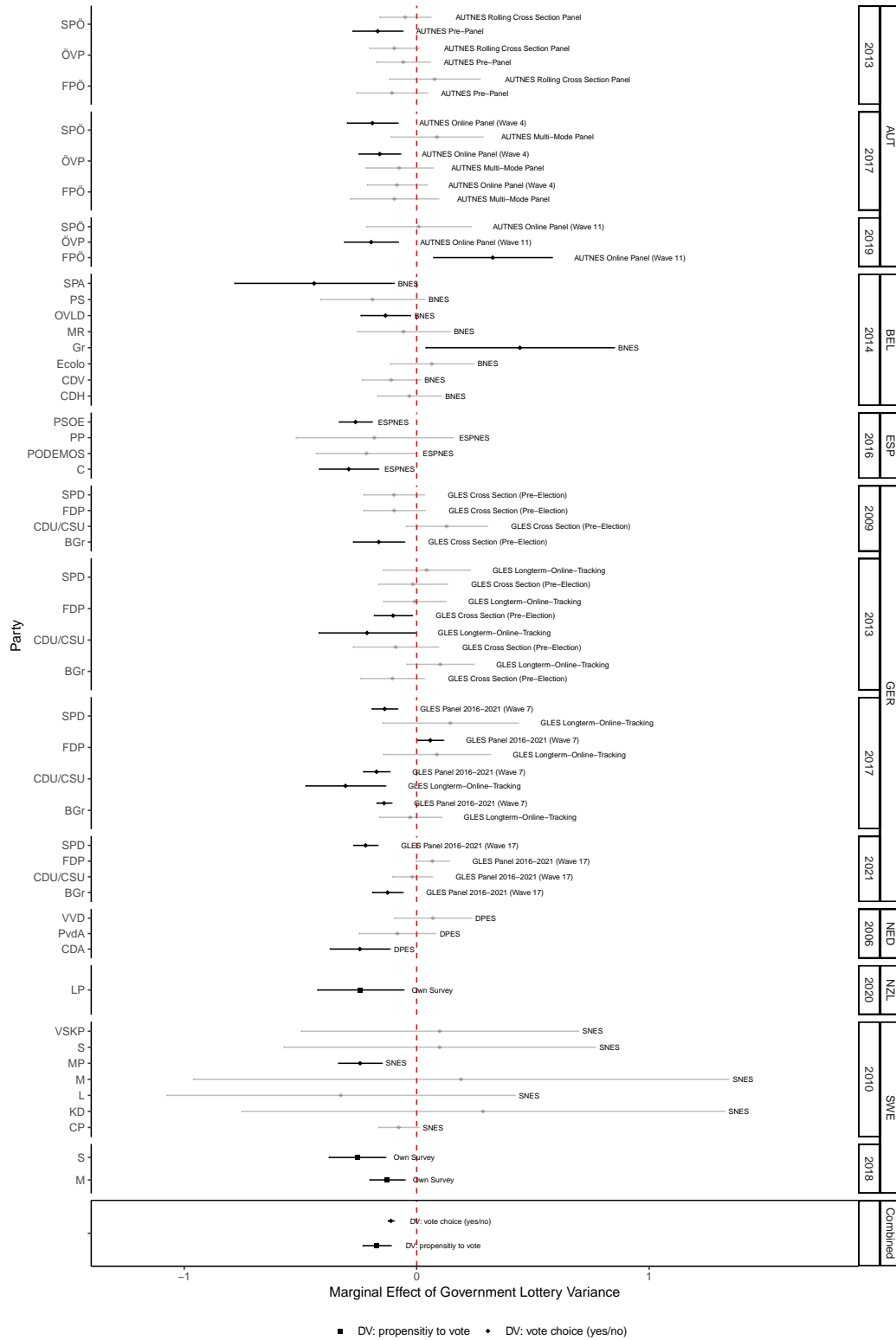
Figure SM2: Overview of observational evidence

Note: The estimate report on the coefficient estimates for government lottery variance originating from the linear regressions of *propensities to vote* on perceived government lottery variance (squares as point estimates) and of the linear regressions of *vote choice* on perceived government lottery variance (diamonds as point estimates). 95% confidence intervals are displayed. Full regression tables are reported in SM B.2.1 - SM B.2.13.

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B.2.1 Austria: AUTNES Pre-Panel Study

2013

- No suitable propensity to vote, but nominal vote choice
  - (0) very unlikely
    ...
    (10) very likely
  - There are several parties in Austria, each of which would like to receive your vote. Using the scale of 0 to 10, where 0 means that it is very unlikely that you would vote for that party and 10 means that it is very likely you would ever vote for that party, how likely is it that you would ever vote for each of the following parties?
  - Item 1 The SPOE
    Item 2 The OEVP
    Item 3 The FPOE
    Item 4 The BZOE
    Item 5 The Greens
    Item 6 Team Stronach

- Coalition scalometer
  - (0) I do not prefer it at all
    ...
    (10) I very much prefer it
  - Now, I'd like to ask you a few questions about the next federal government. Using a scale from 0 to 10, please indicate to what extent you would prefer a coalition between the following parties. 0 means "I do not prefer this coalition at all" and 10 means "I very much prefer this coalition".
  - Item 1 red and green, meaning SPÖ and the Greens
    Item 2 red and black, meaning SPÖ and ÖVP
    Item 3 black and blue, meaning ÖVP and FPÖ
    Item 4 red-blue, meaning SPÖ and FPÖ

- Perceived government probabilities
  - (1) very likely
    (2) fairly likely
    (3) fairly unlikely
    (4) very unlikely
  - How likely do you think it is that the following parties will form a coalition after the election? Very likely, fairly likely, fairly unlikely or very unlikely?
  - Item 1 red and green, meaning SPÖ and the Greens
    Item 2 red and black, meaning SPÖ and ÖVP
    Item 3 black and blue, meaning ÖVP and FPÖ
    Item 4 red-blue, meaning SPÖ and FPÖ

	Dependent variable: Vote for		
	SPO	OVP	FPO
	(1)	(2)	(3)
Government Lottery Variance	-0.168***	-0.058	-0.106*
	(0.057)	(0.057)	(0.057)
Government Lottery Mean	0.080	0.035	0.169***
	(0.054)	(0.045)	(0.041)
Rating Party SPO	0.103***		
	(0.004)		
Rating Party OVP		0.096***	
		(0.004)	
Rating Party FPO			0.075***
			(0.003)
Gender	0.019	-0.030	0.036**
	(0.021)	(0.019)	(0.016)
Edu lev. 3	0.019	0.061	0.213**
	(0.135)	(0.125)	(0.102)
Edu lev. 4	0.120	-0.120	0.319***
	(0.126)	(0.117)	(0.095)
Edu lev. 5	-0.251	0.856**	-0.002
	(0.369)	(0.344)	(0.278)
Edu lev. 6	0.110	-0.113	0.270***
	(0.128)	(0.120)	(0.097)
Edu lev. 7	0.075	-0.059	0.286***
	(0.125)	(0.116)	(0.094)
Edu lev. 8	0.025	-0.055	0.287***
	(0.127)	(0.119)	(0.096)
Edu lev. 9	-0.004	-0.039	0.237**
	(0.129)	(0.121)	(0.098)
Edu lev. 10	-0.033	-0.019	0.217**
	(0.143)	(0.133)	(0.108)
Edu lev. 11	0.274	-0.254	0.264*
	(0.198)	(0.185)	(0.150)
Edu lev. 12	-0.144	-0.081	0.267**
	(0.162)	(0.151)	(0.125)
Edu lev. 13	-0.030	-0.096	0.333***
	(0.134)	(0.125)	(0.101)
Edu lev. 14	-0.103	-0.030	0.273**
	(0.160)	(0.147)	(0.119)
Age	0.001**	0.001*	-0.001***
	(0.001)	(0.001)	(0.0004)
Constant	-0.361***	-0.170	-0.368***
	(0.127)	(0.118)	(0.094)
Observations	1,105	1,159	1,109
R^2	0.448	0.430	0.515
Adjusted R^2	0.439	0.422	0.507
Note:			*p<0.1; **p<0.05; ***p<0.01

Table SM1: Linear regressions of propensities to vote on perceived government lottery variance and mean (AUTNES Pre-Panel Study 2013).

B.2.2 Austria: AUTNES Rolling Cross Section Panel Study

2013

- No propensity to vote, but nominal vote choice
- Coalition scalometer
    - (0) I do not prefer it at all
      ...
      (10) I very much prefer it
    - Now, I'd like to ask you a few questions about the next federal government.Please indicate to what extent you would prefer a coalition between the following parties using a scale from 0 to 10, where 0 means, I do not prefer this coalition at all and 10 means, I very much prefer this coalition.
    - Item 1 red-black, that is, SPÖ and ÖVP
      Item 2 black-blue, that is, ÖVP and FPÖ
      Item 3 red-blue, that is, SPÖ and FPÖ
      Item 4 red-black-green, that is, SPÖ, ÖVP and the Greens
      Item 5 black-blue and Team Stronach, that is, ÖVP, FPÖ and Team Stronach
- Perceived government probabilities
    - (1) very likely
      (2) fairly likely
      (3) fairly unlikely
      (4) very unlikely
    - And now to the likelihood of coalitions, how likely do you think it is that the following parties will form a coalition after the election? Very likely, fairly likely, fairly unlikely, or very unlikely?
    - Item 1 red-black, that is, SPÖ and ÖVP
      Item 2 black-blue, that is, ÖVP and FPÖ
      Item 3 red-blue, that is, SPÖ and FPÖ
      Item 4 red-black-green, that is, SPÖ, ÖVP and the Greens
      Item 5 black-blue and Team Stronach, that is, ÖVP, FPÖ and Team Stronach

	Dependent variable: Vote for		
	SPO	OVP	FPO
	(1)	(2)	(3)
Government Lottery Variance	-0.050	-0.096*	0.077
	(0.056)	(0.055)	(0.099)
Government Lottery Mean	0.022	0.007	0.006
	(0.052)	(0.054)	(0.053)
Rating Party SPO	0.119***		
	(0.003)		
Rating Party OVP		0.117***	
		(0.004)	
Rating Party FPO			0.084***
			(0.004)
Gender	-0.028	0.014	0.018
	(0.019)	(0.019)	(0.014)
Edu lev. 3	-0.210	-0.199	0.230**
	(0.182)	(0.293)	(0.111)
Edu lev. 4	-0.181	-0.072	0.215***
	(0.157)	(0.261)	(0.070)
Edu lev. 5	-0.139	-0.021	0.040
	(0.161)	(0.263)	(0.167)
Edu lev. 6	-0.196	-0.046	0.259***
	(0.161)	(0.265)	(0.081)
Edu lev. 7	-0.190	-0.097	0.161**
	(0.156)	(0.261)	(0.070)
Edu lev. 8	-0.273*	-0.029	0.147**
	(0.157)	(0.262)	(0.072)
Edu lev. 9	-0.285*	-0.027	0.133*
	(0.158)	(0.262)	(0.071)
Edu lev. 10	-0.313**	-0.029	0.146**
	(0.158)	(0.262)	(0.072)
Edu lev. 11	-0.453***	-0.176	0.143*
	(0.170)	(0.268)	(0.078)
Edu lev. 12	-0.495***	-0.062	-0.069
	(0.175)	(0.287)	(0.101)
Edu lev. 13	-0.133	-0.182	0.088
	(0.196)	(0.272)	(0.100)
Edu lev. 14	-0.447***	-0.073	0.225***
	(0.160)	(0.263)	(0.073)
Edu lev. 15	-0.452***	-0.039	0.222**
	(0.168)	(0.270)	(0.088)
Age	0.002***	0.002***	-0.001***
	(0.001)	(0.001)	(0.0004)
Constant	-0.115	-0.310	-0.220***
	(0.161)	(0.263)	(0.075)
Observations	1,233	1,199	1,228
R^2	0.548	0.453	0.543
Adjusted R^2	0.542	0.445	0.536
Note:			*p<0.1; **p<0.05; ***p<0.01

Table SM2: Linear regressions of propensities to vote on perceived government lottery variance and mean (AUTNES Rolling Cross Section Panel Study 2013).

B.2.3 Austria: AUTNES Multi-Mode Panel Study

2017

- No suitable propensity to vote, but nominal vote choice

- Coalition scalometer

  - (0) I do not want it at all
    ...
    (10) I want it very much
  - How much do you want a coalition between the following parties, independently of how likely they are? 0 means that you don't want this coalition at all and 10 means that you very much want this coalition.
  - Item 1 SPÖ and ÖVP
    Item 2 ÖVP and FPÖ
    Item 3 SPÖ and FPÖ

- Perceived government probabilities

  - (0) highly unlikely
    ...
    (10) very likely

  - How likely do you think it is that the following parties will form a coalition after the election? 0 means "highly unlikely"; 10 means "very likely".
  - Item 1 SPÖ and ÖVP
    Item 2 ÖVP and FPÖ
    Item 3 SPÖ and FPÖ

- Like-dislike scale for parties not available; instead (1) squared distance of left-right party placement and self-placement (Wave 1) as well as (2) party leader rating taken as control variables

	Dependent variable: Vote for		
	SPO	OVP	FPO
	(1)	(2)	(3)
Government Lottery Variance	0.087	-0.075	-0.096
	(0.090)	(0.066)	(0.079)
Government Lottery Mean	0.118***	0.157***	0.040
	(0.041)	(0.037)	(0.032)
Distance Party SPO	-0.001		
	(0.001)		
Rating Lead. SPO	0.061***		
	(0.004)		
Distance Party OVP		0.001	
		(0.001)	
Rating Lead. OVP		0.080***	
		(0.004)	
Distance Party FPO			0.0005
			(0.0004)
Rating Lead. FPO			0.072***
			(0.004)
Gender	-0.030	0.002	0.009
	(0.023)	(0.022)	(0.018)
Edu lev. 4	-0.218*	0.092	-0.083
	(0.116)	(0.106)	(0.088)
Edu lev. 6	-0.360*	-0.049	0.145
	(0.189)	(0.176)	(0.142)
Edu lev. 7	-0.157	-0.085	0.046
	(0.109)	(0.099)	(0.082)
Edu lev. 8	-0.202*	0.0001	0.012
	(0.110)	(0.100)	(0.083)
Edu lev. 9	-0.211*	0.078	-0.065
	(0.112)	(0.102)	(0.084)
Edu lev. 10	-0.192*	0.099	-0.051
	(0.112)	(0.102)	(0.084)
Edu lev. 11	-0.254**	0.053	0.040
	(0.120)	(0.110)	(0.090)
Edu lev. 12	-0.318**	0.125	-0.007
	(0.143)	(0.132)	(0.107)
Edu lev. 13	-0.236*	0.054	-0.023
	(0.121)	(0.111)	(0.091)
Edu lev. 14	-0.264**	0.081	-0.016
	(0.112)	(0.102)	(0.084)
Edu lev. 15	-0.261**	0.075	-0.087
	(0.127)	(0.116)	(0.095)
Age	0.001*	0.003***	-0.004***
	(0.001)	(0.001)	(0.0005)
Constant	0.029	-0.357***	0.097
	(0.118)	(0.108)	(0.089)
Observations	1,144	1,137	1,145
R^2	0.230	0.422	0.471
Adjusted R^2	0.219	0.414	0.463

Note: *p<0.1; **p<0.05; ***p<0.01

Table SM3: Linear regressions of propensities to vote on perceived government lottery variance and mean (AUTNES Multi-Mode Panel Study 2017, Wave 2)

B.2.4 Austria: AUTNES Online Panel Study

2017, Wave 4

- No suitable propensity to vote, but nominal vote choice
- Coalition scalometer
    - (0) I do not want it at all
      ...
      (10) I want it very much
    - On a scale from 0 to 10, how much do you want a coalition between the following parties, independently of how likely they are?
    - Item 1: SPÖ and ÖVP
      Item 2: ÖVP and FPÖ
      Item 3: SPÖ and FPÖ
- Perceived government probabilities
    - (0) highly unlikely
      ...
      (10) very likely

    - And now about the likelihood of coalitions. How likely do you think it is that the following parties will form a coalition after the national parliamentary election on October 15, 2017?
    - Item 1: SPÖ and ÖVP
      Item 2: ÖVP and FPÖ
      Item 3: SPÖ and FPÖ
- Like-dislike scale for parties not available; instead (1) squared distance of left-right party placement and self-placement (Wave 1) as well as (2) party leader rating taken as control variables

	Dependent variable: Vote for		
	SPO	OVP	FPO
	(1)	(2)	(3)
Government Lottery Variance	-0.190***	-0.159***	-0.085
	(0.062)	(0.050)	(0.075)
Government Lottery Mean	0.224***	0.003	0.074**
	(0.031)	(0.028)	(0.029)
Distance Party SPO	-0.0001		
	(0.0004)		
Rating Lead. SPO	0.061***		
	(0.003)		
Distance Party OVP		-0.001***	
		(0.0005)	
Rating Lead. OVP		0.061***	
		(0.003)	
Distance Party FPO			-0.001**
			(0.0004)
Rating Lead. FPO			0.080***
			(0.003)
Gender	-0.054***	-0.015	-0.042***
	(0.017)	(0.017)	(0.016)
Edu lev. 4	0.096	0.056	0.034
	(0.110)	(0.115)	(0.104)
Edu lev. 6	0.087	0.032	0.083
	(0.118)	(0.123)	(0.112)
Edu lev. 7	0.145	0.072	0.035
	(0.107)	(0.111)	(0.101)
Edu lev. 8	0.110	0.089	0.022
	(0.109)	(0.113)	(0.103)
Edu lev. 9	0.105	0.150	-0.009
	(0.111)	(0.115)	(0.105)
Edu lev. 10	0.147	0.121	-0.010
	(0.109)	(0.114)	(0.103)
Edu lev. 11	0.027	0.117	0.021
	(0.117)	(0.121)	(0.110)
Edu lev. 12	0.112	0.254*	0.011
	(0.134)	(0.139)	(0.127)
Edu lev. 13	-0.023	0.227*	0.015
	(0.117)	(0.121)	(0.111)
Edu lev. 14	0.034	0.121	0.038
	(0.110)	(0.114)	(0.104)
Edu lev. 15	0.016	0.190	-0.111
	(0.128)	(0.133)	(0.121)
Age	0.002***	0.001	-0.001*
	(0.001)	(0.001)	(0.001)
Constant	-0.296***	-0.178	0.006
	(0.113)	(0.117)	(0.106)
Observations	1,710	1,720	1,733
R^2	0.369	0.306	0.552
Adjusted R^2	0.363	0.299	0.547

Note: *p<0.1; **p<0.05; ***p<0.01

Table SM4: Linear regressions of propensities to vote on perceived government lottery variance and mean (AUTNES Online Panel Study 2017-2019, wave 4, 2017)

2019, Wave 11

- No suitable propensity to vote, but nominal vote choice

- Coalition scalometer
  - (0) I do not want it at all
    ...
    (10) I want it very much
  - On a scale from 0 to 10, how much do you want a coalition between the following parties, independently of how likely they are?
  - Item 1: ÖVP and SPÖ
    Item 2: ÖVP and FPÖ
    Item 3: SPÖ and FPÖ

- Perceived government probabilities
  - (0) highly unlikely
    ...
    (10) very likely

  - And now about the likelihood of coalitions. How likely do you think it is that the following parties will form a coalition after the national parliamentary election on September 29, 2019?
  - Item 1: ÖVP and SPÖ
    Item 2: ÖVP and FPÖ
    Item 3: SPÖ and FPÖ

- Like-dislike scale for parties not available; instead (1) squared distance of left-right party placement and self-placement (Wave 1) as well as (2) party leader rating taken as control variables

	Dependent variable: Vote for		
	SPO	OVP	FPO
	(1)	(2)	(3)
Government Lottery Variance	0.008	-0.196***	0.327**
	(0.080)	(0.056)	(0.128)
Government Lottery Mean	0.242***	-0.119***	0.352***
	(0.038)	(0.030)	(0.036)
Distance Party SPO	0.0004		
	(0.0005)		
Rating Lead. SPO	0.054***		
	(0.003)		
Distance Party OVP		-0.0005	
		(0.001)	
Rating Lead. OVP		0.084***	
		(0.003)	
Distance Party FPO			0.001***
			(0.0004)
Rating Lead. FPO			0.047***
			(0.004)
Gender	-0.007	-0.041**	0.035*
	(0.019)	(0.020)	(0.018)
Edu lev. 4	0.214*	0.064	0.005
	(0.112)	(0.118)	(0.107)
Edu lev. 6	0.281**	0.039	0.053
	(0.124)	(0.131)	(0.117)
Edu lev. 7	0.209*	0.090	0.011
	(0.107)	(0.112)	(0.102)
Edu lev. 8	0.125	0.075	0.048
	(0.109)	(0.114)	(0.104)
Edu lev. 9	0.118	0.113	-0.023
	(0.111)	(0.117)	(0.106)
Edu lev. 10	0.169	0.118	-0.018
	(0.110)	(0.115)	(0.105)
Edu lev. 11	0.112	0.113	-0.066
	(0.116)	(0.122)	(0.111)
Edu lev. 12	-0.034	0.074	0.076
	(0.140)	(0.147)	(0.134)
Edu lev. 13	0.052	0.109	-0.039
	(0.119)	(0.125)	(0.114)
Edu lev. 14	0.024	0.041	0.042
	(0.110)	(0.116)	(0.105)
Edu lev. 15	-0.080	0.082	-0.028
	(0.133)	(0.139)	(0.127)
Age	0.001	0.001*	-0.001*
	(0.001)	(0.001)	(0.001)
Constant	-0.264**	-0.160	-0.119
	(0.113)	(0.120)	(0.109)
Observations	1,151	1,155	1,162
R^2	0.345	0.458	0.475
Adjusted R^2	0.335	0.450	0.467

Note:	*p<0.1; **p<0.05; ***p<0.01

Table SM5: Linear regressions of vote choice on perceived government lottery variance and mean (AUTNES Online Panel Study 2017-2019, wave 11, 2019)

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B.2.5 Belgium: Belgian National Election Study

2014

	PS	SP.A	CD&V	CDH	MR	OpenVLD	Ecolo	Groen
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Government Lottery Variance	−0.190*	−0.441**	−0.110*	−0.032	−0.057	−0.134**	0.065	0.444**
	(0.114)	(0.175)	(0.064)	(0.070)	(0.102)	(0.055)	(0.092)	(0.207)
Government Lottery Mean	−0.054	−0.030	0.016	−0.114***	−0.093**	−0.011	−0.022	0.014
	(0.044)	(0.051)	(0.037)	(0.036)	(0.044)	(0.039)	(0.033)	(0.032)
Rating Party PS	0.085***							
	(0.004)							
Rating Party SP.A		0.078***						
		(0.006)						
Rating Party CDV			0.066***					
			(0.005)					
Rating Party CDH				0.051***				
				(0.005)				
Rating Party MR					0.096***			
					(0.003)			
Rating Party OpenVLD						0.059***		
						(0.005)		
Rating Party Ecolo							0.041***	
							(0.004)	
Rating Party Groen								0.028***
								(0.004)
Gender	0.009	−0.006	0.054**	0.008	−0.010	−0.029	−0.014	−0.002
	(0.023)	(0.026)	(0.025)	(0.019)	(0.023)	(0.025)	(0.018)	(0.019)
Edu lev. 2	−0.038	−0.144	0.050	−0.018	−0.034	−0.009	0.103**	−0.069
	(0.197)	(0.138)	(0.121)	(0.095)	(0.148)	(0.089)	(0.048)	(0.049)
Edu lev. 3	0.165	−0.215**	0.006	−0.095	−0.042	0.009	0.095**	−0.018
	(0.188)	(0.102)	(0.064)	(0.088)	(0.132)	(0.085)	(0.048)	(0.046)
Edu lev. 4	0.080	−0.244**	−0.024	0.028	−0.086	0.014	0.090**	−0.011
	(0.186)	(0.098)	(0.058)	(0.088)	(0.130)	(0.082)	(0.043)	(0.045)
Edu lev. 5	0.024	−0.238**	−0.024	−0.040	−0.028	0.017	0.074*	−0.00002
	(0.187)	(0.099)	(0.060)	(0.088)	(0.131)	(0.083)	(0.045)	(0.047)
Edu lev. 6	0.014	−0.271***	−0.013	−0.022	−0.025	0.002	0.108***	0.004
	(0.185)	(0.097)	(0.058)	(0.086)	(0.128)	(0.081)	(0.042)	(0.045)
Edu lev. 7	0.002	−0.297***	0.009	0.010	−0.016	0.011	0.164***	0.067
	(0.186)	(0.099)	(0.062)	(0.087)	(0.129)	(0.084)	(0.045)	(0.052)
Edu lev. 8	−0.040	−0.255**	−0.026	0.096	−0.059	−0.059	0.121**	−0.061
	(0.190)	(0.122)	(0.080)	(0.104)	(0.142)	(0.097)	(0.060)	(0.049)
Age	0.002**	−0.0003	0.001	0.0003	0.001	0.001	−0.002***	−0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Constant	−0.278	0.085	−0.293***	−0.092	−0.153	−0.179*	−0.099*	−0.058
	(0.188)	(0.105)	(0.072)	(0.092)	(0.134)	(0.091)	(0.055)	(0.053)
Observations	935	685	687	926	930	689	939	687
R^2	0.377	0.335	0.222	0.170	0.418	0.215	0.186	0.158
Adjusted R^2	0.369	0.324	0.209	0.159	0.410	0.201	0.175	0.143

Dependent variable: Vote for

Note: *p<0.1; **p<0.05; ***p<0.01

Table SM6: Linear regressions of propensities to vote on perceived government lottery variance and mean (Belgian National Election Study 2014)

- No propensity to vote, but nominal vote choice
- Coalition scalometer
  - 0 Do not like this coalition at all
    ...

10 I really like this coalition

- Please rate each of the following coalitions that could form at the FEDERAL level of government on a scale of 0 to 10, where 0 means you don't like this coalition at all and 10 means you like it a lot.
- 1 PS, SP.A, CDV, CDH, MR, Open VLD
  2 N-VA, CDV, CDH, MR, Open VLD
  3 PS, SP.A, CDV, CDH, MR, Open VLD, Ecolo, Groen
  4 CDV, CDH, PS, SP.A, Ecolo, Groen

- Perceived government probabilities

  - 0 very unlikely
    ...
    10 very likely

  - Please rate the likelihood of each of the following coalitions forming at the FEDERAL government level on a scale of 0 to 10, where 0 means it is very unlikely and 10 means it is very likely.
  - 1 PS, SP.A, CDV, CDH, MR, Open VLD
    2 N-VA, CDV, CDH, MR, Open VLD
    3 PS, SP.A, CDV, CDH, MR, Open VLD, Ecolo, Groen
    4 CDV, CDH, PS, SP.A, Ecolo, Groen

B.2.6 Spain: Spanish National Election Study

2016

- No propensity to vote, but nominal vote choice
- Coalition scalometer

  - 0 Strongly dislike the coalition
    ...
    10 Strongly like the coalition
  - Please rate each of the following government agreements that could be reached after the election on a scale from 0 to 10, where 0 means you really dislike the agreement and 10 means you really like it.
  - 1 PP with PSOE
    2 PP with Ciudadanos
    3 PSOE with Unidos Podemos
    4 PSOE with Ciudadanos
    5 Unidos Podemos with Ciudadanos

- Perceived government probabilities

  - 0 very unlikely
    ...
    10 very likely

  - Now we would like to ask you about the likelihood of coalitions forming the government. In your opinion, how likely is it that the following coalitions will form the government after the election, where 0 means very unlikely and 10 means very likely?

	Dependent variable: Vote for			
	PP	PSOE	Podemos	Ciudadanos
	(1)	(2)	(3)	(4)
Government Lottery Variance	-0.182	-0.263^{***}	-0.216^{*}	-0.292^{***}
	(0.173)	(0.036)	(0.111)	(0.065)
Government Lottery Mean	-0.114^{***}	-0.072^{***}	-0.061	-0.027
	(0.042)	(0.025)	(0.044)	(0.033)
Rating Party PP	0.098^{***}			
	(0.004)			
Rating Party PSOE		0.078^{***}		
		(0.003)		
Rating Party Podemos			0.085^{***}	
			(0.004)	
Rating Party Ciudadanos				0.063^{***}
				(0.004)
Gender	-0.007	-0.011	0.010	-0.022
	(0.012)	(0.014)	(0.017)	(0.015)
Edu lev. 2	-0.060^{*}	0.009	-0.089^{*}	0.016
	(0.036)	(0.050)	(0.053)	(0.050)
Edu lev. 3	-0.076^{**}	-0.030	-0.105^{**}	0.031
	(0.034)	(0.048)	(0.051)	(0.048)
Edu lev. 4	-0.039	-0.012	-0.111^{**}	0.018
	(0.035)	(0.049)	(0.053)	(0.049)
Edu lev. 5	-0.051	0.020	-0.087^{*}	0.019
	(0.035)	(0.049)	(0.052)	(0.049)
Edu lev. 6	-0.043	-0.034	-0.112^{**}	0.026
	(0.037)	(0.051)	(0.056)	(0.051)
Age	0.001^{***}	0.001^{*}	-0.002^{**}	-0.001^{***}
	(0.0004)	(0.0005)	(0.001)	(0.001)
Constant	-0.033	-0.126^{**}	0.116^{*}	-0.020
	(0.040)	(0.055)	(0.062)	(0.054)
Observations	1,700	1,695	1,682	1,685
R^2	0.590	0.366	0.432	0.278
Adjusted R^2	0.587	0.362	0.428	0.274

Note:	*p<0.1; **p<0.05; ***p<0.01

Table SM7: Linear regressions of vote on perceived government lottery variance and mean (Spanish National Election Study 2016)

    – 1 PP with PSOE
      2 PP with Ciudadanos
      3 PSOE with Unidos Podemos
      4 PSOE with Ciudadanos
      5 Unidos Podemos with Ciudadanos

B.2.7 Germany: GLES Longterm-Online-Tracking

2013

- No propensity to vote, but nominal vote choice

- Coalition scalometer

  - (1) -5 not desirable at all
    ...
    (11) +5 very desirable
  - Now some questions about the possible composition of the next federal government after the federal election on September 22, 2013. Regardless of how likely you think such a coalition is, how desirable do you personally think the following coalition governments are?
  - (A) Grand coalition (CDU/CSU and SPD)
    (B) Black-Yellow coalition (CDU/CSU and FDP)
    (C) Red-Green coalition (SPD and GREENS)
    (D) Jamaica coalition (CDU/CSU, FDP and GREENS)
    (E) Traffic light coalition (SPD, FDP, GREENS)
    (F) Black-Green coalition (CDU/CSU and GREENS)
    (G) Red-Red-Green coalition (SPD, DIE LINKE, GRÜNE)

- Perceived government probabilities

  - (1) 1 very unlikely
    ...
    (11) 11 very likely
  - And now to the prospects of success for possible government coalitions. How likely do you think it is that the governing coalition after the next federal election will consist of the following parties?
  - (A) Grand coalition (CDU/CSU and SPD)
    (B) Black-Yellow coalition (CDU/CSU and FDP)
    (C) Red-Green coalition (SPD and GREENS)
    (D) Jamaica coalition (CDU/CSU, FDP and GREENS)
    (E) Traffic light coalition (SPD, FDP, GREENS)
    (F) Black-Green coalition (CDU/CSU and GREENS)
    (G) Red-Red-Green coalition (SPD, DIE LINKE, GRÜNE)

	Dependent variable: Vote for			
	Union	SPD	FDP	Greens
	(1)	(2)	(3)	(4)
Government Lottery Variance	−0.214**	0.043	−0.009	0.101
	(0.106)	(0.096)	(0.069)	(0.074)
Government Lottery Mean	0.254***	0.189***	0.059**	0.057
	(0.056)	(0.050)	(0.027)	(0.047)
Rating Party UNION	0.077***			
	(0.005)			
Rating Party SPD		0.073***		
		(0.005)		
Rating Party FDP			0.019***	
			(0.004)	
Rating Party GRUENE				0.042***
				(0.004)
Gender	−0.010	0.019	0.024	−0.024
	(0.027)	(0.027)	(0.015)	(0.023)
Edu lev. 2	0.365***	−0.238	−0.213	−0.271
	(0.136)	(0.175)	(0.183)	(0.234)
Edu lev. 3	0.351***	−0.040	−0.171	−0.143
	(0.092)	(0.132)	(0.183)	(0.235)
Edu lev. 4	0.403***	−0.085	−0.190	−0.134
	(0.077)	(0.123)	(0.182)	(0.230)
Edu lev. 5	0.295***	−0.155	−0.178	−0.100
	(0.098)	(0.139)	(0.186)	(0.237)
Edu lev. 6	0.382***	−0.183	−0.184	−0.097
	(0.075)	(0.121)	(0.182)	(0.230)
Edu lev. 7	0.377***	−0.146	−0.169	−0.167
	(0.090)	(0.128)	(0.184)	(0.232)
Edu lev. 8	0.328***	−0.160	−0.137	−0.072
	(0.079)	(0.123)	(0.182)	(0.231)
Edu lev. 9	0.086	−0.064	−0.201	−0.308
	(0.160)	(0.223)	(0.182)	(0.240)
Age	0.001	0.002*	0.001**	−0.0005
	(0.001)	(0.001)	(0.001)	(0.001)
Constant	−0.652***	−0.286**	0.050	−0.016
	(0.091)	(0.131)	(0.181)	(0.234)
Observations	775	812	798	783
R^2	0.380	0.259	0.121	0.202
Adjusted R^2	0.369	0.247	0.106	0.189

Note: *p<0.1; **p<0.05; ***p<0.01

Table SM8: Linear regressions of propensities to vote on perceived government lottery variance and mean (GLES 2013).

2017

	Dependent variable: Vote for			
	Union	SPD	FDP	Greens
	(1)	(2)	(3)	(4)
Government Lottery Variance	−0.306***	0.145	0.087	−0.028
	(0.088)	(0.149)	(0.118)	(0.069)
Government Lottery Mean	0.167***	−0.080*	0.102***	0.001
	(0.056)	(0.045)	(0.035)	(0.036)
Rating Party UNION	0.080***			
	(0.005)			
Rating Party SPD		0.062***		
		(0.005)		
Rating Party FDP			0.045***	
			(0.004)	
Rating Party GRUENE				0.040***
				(0.004)
Gender	−0.050*	0.036	0.040**	−0.019
	(0.026)	(0.024)	(0.020)	(0.020)
Edu lev. 2	−0.180	0.019	0.217	0.134
	(0.274)	(0.188)	(0.138)	(0.130)
Edu lev. 3	0.053	−0.035	0.252***	−0.015
	(0.232)	(0.077)	(0.085)	(0.063)
Edu lev. 4	−0.010	0.015	0.174***	0.058
	(0.226)	(0.063)	(0.065)	(0.057)
Edu lev. 5	0.080	−0.113	0.163**	−0.005
	(0.231)	(0.074)	(0.074)	(0.060)
Edu lev. 6	−0.011	−0.036	0.182***	0.079
	(0.225)	(0.059)	(0.062)	(0.056)
Edu lev. 7	−0.006	−0.027	0.233***	0.056
	(0.229)	(0.069)	(0.075)	(0.063)
Edu lev. 8	−0.008	−0.107*	0.185***	0.114**
	(0.225)	(0.059)	(0.063)	(0.057)
Edu lev. 9	−0.238	−0.374***	0.095	0.847***
	(0.226)	(0.068)	(0.064)	(0.063)
Age	−0.002**	0.001	−0.001	−0.0001
	(0.001)	(0.001)	(0.001)	(0.001)
Constant	−0.157	−0.211***	−0.372***	−0.191***
	(0.228)	(0.069)	(0.071)	(0.066)
Observations	893	905	903	902
R^2	0.339	0.194	0.233	0.182
Adjusted R^2	0.330	0.183	0.221	0.170

Note: *p<0.1; **p<0.05; ***p<0.01

Table SM9: Linear regressions of propensities to vote on perceived government lottery variance and mean (GLES 2017).

- No propensity to vote, but nominal vote choice
- Coalition scalometer

23

- (1) -5 not desirable at all

  ...

  (11) +5 very desirable
- Now a question about the possible composition of the federal government. Regardless of how likely you think such a coalition is, how desirable do you personally think the following coalition governments are?
- (A) Große Koalition (CDU/CSU und SPD)
  (B) Rot-Rot-Grüne Koalition (SPD, DIE LINKE, GRÜNE)
  (C) Schwarz-Grüne Koalition (CDU/CSU und GRÜNE)
  (D) Jamaika-Koalition (CDU/CSU, FDP und GRÜNE)
  (E) Schwarz-Gelbe Koalition (CDU/CSU und FDP)

- Perceived government probabilities
  - (1) 1 very unlikely

    ...

    (11) 11 very likely
  - And now to the prospects of success for possible government coalitions. How likely do you think it is that the future governing coalition will consist of the following parties?
  - (A) Große Koalition (CDU/CSU und SPD)
    (B) Rot-Rot-Grüne Koalition (SPD, DIE LINKE, GRÜNE)
    (C) Schwarz-Grüne Koalition (CDU/CSU und GRÜNE)
    (D) Jamaika-Koalition (CDU/CSU, FDP und GRÜNE)
    (E) Schwarz-Gelbe Koalition (CDU/CSU und FDP)

B.2.8 Germany: GLES Cross Section (Pre-Election)

2009

- No propensity to vote, but nominal vote choice
- Coalition scalometer
  - 1 -5 not desirable at all

    ...

    11 +5 very desirable
  - Now a question about the possible composition of the federal government after the next federal election. Regardless of how likely you think such a coalition is, how desirable do you personally think the following coalition governments are?
  - 1 CDU/CSU and SPD (grand coalition)
    2 SPD, FDP and GREENS (traffic light coalition)
    3 CDU/CSU, FDP and GREENS (Jamaica coalition)
    4 SPD, DIE LINKE and GRÜNE (red-red-green coalition)
    6 SPD all-party government
    7 CDU/CSU all-party government
    11 CDU/CSU and FDP (black-yellow coalition)
    12 CDU/CSU, SPD and FDP
    13 CDU/CSU and DIE LINKE
    14 CDU/CSU and GREENS (Black-Green coalition)
    15 DIE LINKE and GRÜNE
    16 SPD and FDP (Social Liberal Coalition)
- Perceived government probabilities
  - 1 very unlikely

    ...

    11 very likely

	Dependent variable: Vote for			
	Union	SPD	FDP	Greens
	(1)	(2)	(3)	(4)
Government Lottery Variance	0.129	−0.098	−0.097	−0.163***
	(0.090)	(0.067)	(0.067)	(0.057)
Government Lottery Mean	0.083	0.120**	0.024	0.023
	(0.059)	(0.057)	(0.051)	(0.051)
Rating Party UNION	0.103***			
	(0.004)			
Rating Party SPD		0.088***		
		(0.004)		
Rating Party FDP			0.051***	
			(0.004)	
Rating Party GRUENE				0.058***
				(0.004)
Gender	−0.036*	0.008	0.042***	0.005
	(0.020)	(0.020)	(0.016)	(0.016)
Edu lev. 2	−0.340***	0.087	0.113**	0.115**
	(0.058)	(0.086)	(0.044)	(0.056)
Edu lev. 3	−0.329***	0.064	0.142***	0.095*
	(0.058)	(0.086)	(0.045)	(0.056)
Edu lev. 4	−0.346***	−0.025	0.160***	0.160**
	(0.074)	(0.096)	(0.057)	(0.071)
Edu lev. 5	−0.366***	−0.019	0.146***	0.175***
	(0.061)	(0.087)	(0.047)	(0.059)
Edu lev. 9	−0.320**	0.225	−0.068	0.178
	(0.127)	(0.165)	(0.061)	(0.171)
Age	0.002***	0.001*	0.0004	−0.002***
	(0.001)	(0.001)	(0.0005)	(0.001)
Constant	−0.080	−0.445***	−0.347***	−0.202***
	(0.068)	(0.095)	(0.057)	(0.067)
Observations	1,294	1,306	1,311	1,293
R^2	0.437	0.296	0.170	0.233
Adjusted R^2	0.433	0.290	0.163	0.227

Note: *p<0.1; **p<0.05; ***p<0.01

Table SM10: Linear regressions of propensities to vote on perceived government lottery variance and mean (GLES 2009).

– What do you think, which parties will then actually form the government together after the federal election?
– 1 CDU/CSU and SPD (grand coalition)
  2 SPD, FDP and GREENS (traffic light coalition)
  3 CDU/CSU, FDP and GREENS (Jamaica coalition)
  4 SPD, DIE LINKE and GRÜNE (red-red-green coalition)
  6 SPD all-party government
  7 CDU/CSU all-party government
  11 CDU/CSU and FDP (black-yellow coalition)
  12 CDU/CSU, SPD and FDP
  13 CDU/CSU and DIE LINKE
  14 CDU/CSU and GREENS (Black-Green coalition)
  15 DIE LINKE and GRÜNE
  16 SPD and FDP (Social Liberal Coalition)

2013

	Dependent variable: Vote for			
	Union	SPD	FDP	Greens
	(1)	(2)	(3)	(4)
Government Lottery Variance	−0.090	−0.016	−0.102**	−0.105
	(0.094)	(0.076)	(0.042)	(0.070)
Government Lottery Mean	0.190***	0.156***	0.078***	0.115***
	(0.045)	(0.047)	(0.019)	(0.033)
Rating Party UNION	0.099***			
	(0.004)			
Rating Party SPD		0.096***		
		(0.005)		
Rating Party FDP			0.020***	
			(0.003)	
Rating Party GRUENE				0.044***
				(0.004)
Gender	−0.035*	0.056***	0.017	−0.004
	(0.020)	(0.022)	(0.012)	(0.016)
Edu lev. 2	0.025	−0.137	−0.006	−0.108
	(0.085)	(0.093)	(0.047)	(0.067)
Edu lev. 3	−0.001	−0.163*	−0.001	−0.120*
	(0.086)	(0.093)	(0.047)	(0.068)
Edu lev. 4	−0.067	−0.274***	0.083	−0.024
	(0.100)	(0.103)	(0.064)	(0.082)
Edu lev. 5	−0.020	−0.275***	0.044	−0.096
	(0.087)	(0.095)	(0.050)	(0.070)
Edu lev. 6	−0.123	−0.397***	−0.067	−0.204***
	(0.157)	(0.097)	(0.052)	(0.072)
Edu lev. 9	0.284**	−0.345**	−0.001	−0.258***
	(0.127)	(0.153)	(0.050)	(0.087)
Age	0.003***	0.0004	0.0001	−0.002***
	(0.001)	(0.001)	(0.0004)	(0.001)
Constant	−0.492***	−0.362***	−0.113**	0.033
	(0.092)	(0.103)	(0.052)	(0.074)
Observations	1,205	1,209	1,223	1,207
R^2	0.496	0.300	0.109	0.221
Adjusted R^2	0.492	0.294	0.101	0.213

Note: *p<0.1; **p<0.05; ***p<0.01

Table SM11: Linear regressions of propensities to vote on perceived government lottery variance and mean (GLES 2013).

- No propensity to vote, but nominal vote choice
- Coalition scalometer
  - 1 -5 not desirable at all
    ...
    11 +5 very desirable

– Now a question about the possible composition of the federal government after the next federal election. Regardless of how likely you think such a coalition is, how desirable do you personally consider the following coalition governments?

– 1 CDU/CSU and SPD (grand coalition)
2 SPD, FDP and GREENS (traffic light coalition)
3 CDU/CSU, FDP and GREENS (Jamaica coalition)
4 SPD, DIE LINKE and GRÜNE (red-red-green coalition)
6 SPD all-party government
7 CDU/CSU all-party government
11 CDU/CSU and FDP (black-yellow coalition)
12 CDU/CSU, SPD and FDP
13 CDU/CSU and DIE LINKE
14 CDU/CSU and GREENS (Black-Green coalition)
15 DIE LINKE and GRÜNE
16 SPD and FDP (Social Liberal Coalition)

- Perceived government probabilities

– 1 very unlikely
...
11 very likely

– What do you think, which parties will then actually form the government together after the federal election?

– 1 CDU/CSU and SPD (grand coalition)
2 SPD, FDP and GREENS (traffic light coalition)
3 CDU/CSU, FDP and GREENS (Jamaica coalition)
4 SPD, DIE LINKE and GRÜNE (red-red-green coalition)
6 SPD all-party government
7 CDU/CSU all-party government
11 CDU/CSU and FDP (black-yellow coalition)
12 CDU/CSU, SPD and FDP
13 CDU/CSU and DIE LINKE
14 CDU/CSU and GREENS (Black-Green coalition)
15 DIE LINKE and GRÜNE
16 SPD and FDP (Social Liberal Coalition)

B.2.9 Germany: GLES Panel 2016-2021

2017, Wave 7

- No propensity to vote, but nominal vote choice
- Coalition scalometer

– (1) -5 not desirable at all
...
(11) +5 very desirable

– Regardless of which coalition governs and how likely the following coalitions are at the moment, how desirable are these coalition governments at federal level for you personally?

– (A) Grand coalition (CDU/CSU and SPD)
(B) Black-yellow coalition (CDU/CSU and FDP)
(C) Red-green coalition (SPD and Bündnis 90/Die Grünen)
(E) Black-green coalition (CDU/CSU and Bündnis 90/Die Grünen)
(F) Traffic-light-coalition (SPD, FDP and Bündnis 90/Die Grünen)
(G) Jamaica coalition (CDU/CSU, FDP and Bündnis 90/Die Grünen)
(H) Red-red-green coalition (SPD, Die Linke and Bündnis 90/Die Grünen)

	Dependent variable: Vote for			
	Union	SPD	FDP	Greens
	(1)	(2)	(3)	(4)
Government Lottery Variance	-0.173^{***}	-0.138^{***}	0.059^{**}	-0.140^{***}
	(0.029)	(0.028)	(0.029)	(0.017)
Government Lottery Mean	0.197^{***}	0.130^{***}	0.044^{**}	0.018
	(0.024)	(0.023)	(0.020)	(0.019)
Rating Party UNION	0.070^{***}			
	(0.002)			
Rating Party SPD		0.063^{***}		
		(0.002)		
Rating Party FDP			0.042^{***}	
			(0.002)	
Rating Party GRUENE				0.036^{***}
				(0.002)
Gender	-0.019^{**}	0.030^{***}	0.013^{*}	0.005
	(0.008)	(0.009)	(0.007)	(0.007)
Edu lev. 2	-0.042	0.078^{*}	-0.065	-0.010
	(0.054)	(0.046)	(0.050)	(0.027)
Edu lev. 3	-0.056	0.026	-0.062	0.003
	(0.053)	(0.045)	(0.049)	(0.027)
Edu lev. 4	-0.029	0.011	-0.056	0.026
	(0.055)	(0.046)	(0.050)	(0.029)
Edu lev. 5	-0.051	0.003	-0.034	0.047^{*}
	(0.053)	(0.045)	(0.049)	(0.027)
Edu lev. 9	-0.127	-0.043	-0.096	0.019
	(0.080)	(0.071)	(0.068)	(0.071)
Age	0.0003	0.003^{***}	0.00000	-0.001^{***}
	(0.0004)	(0.0004)	(0.0003)	(0.0003)
Constant	-0.167^{***}	-0.372^{***}	-0.088^{*}	-0.039
	(0.056)	(0.049)	(0.051)	(0.032)
Observations	6,653	6,649	6,651	6,507
R^2	0.348	0.257	0.183	0.156
Adjusted R^2	0.347	0.256	0.182	0.154

Note: *p<0.1; **p<0.05; ***p<0.01

Table SM12: Linear regressions of propensities to vote on perceived government lottery variance and mean (GLES Panel 2016-2021, wave 7 (2017)).

- Perceived government probabilities
  - (1) definitely not
    (2) probably not
    (3) maybe
    (4) probably
    (5) definitely
  - Imagine that the following parties had a majority in the Bundestag after the 2017 federal election. Do you think that these parties would then be willing to enter into a coalition with each other?
  - (A) Grand coalition (CDU/CSU and SPD)
    (B) Black-yellow coalition (CDU/CSU and FDP)
    (C) Red-green coalition (SPD and Bündnis 90/Die Grünen)
    (E) Black-green coalition (CDU/CSU and Bündnis 90/Die Grünen)
    (F) Traffic-light-coalition (SPD, FDP and Bündnis 90/Die Grünen)
    (G) Jamaica coalition (CDU/CSU, FDP and Bündnis 90/Die Grünen)
    (H) Red-red-green coalition (SPD, Die Linke and Bündnis 90/Die Grünen)

2021, Wave 17

	Dependent variable: Vote for			
	Union	SPD	FDP	Greens
	(1)	(2)	(3)	(4)
Government Lottery Variance	−0.019	−0.220***	0.067*	−0.125***
	(0.044)	(0.027)	(0.037)	(0.034)
Government Lottery Mean	−0.043	0.008	−0.111***	−0.124***
	(0.028)	(0.025)	(0.017)	(0.030)
Rating Party UNION	0.083***			
	(0.002)			
Rating Party SPD		0.063***		
		(0.002)		
Rating Party FDP			0.050***	
			(0.002)	
Rating Party GRUENE				0.075***
				(0.002)
Gender	0.025**	0.020**	−0.007	0.015
	(0.010)	(0.010)	(0.008)	(0.010)
Edu lev. 2	−0.172**	0.012	0.060**	0.031
	(0.070)	(0.078)	(0.027)	(0.057)
Edu lev. 3	−0.150**	−0.015	0.058**	0.010
	(0.069)	(0.078)	(0.027)	(0.057)
Edu lev. 4	−0.165**	−0.009	0.080***	0.048
	(0.071)	(0.079)	(0.029)	(0.058)
Edu lev. 5	−0.155**	−0.050	0.089***	0.062
	(0.069)	(0.078)	(0.027)	(0.057)
Age	0.0002	0.002***	−0.001**	−0.003***
	(0.0004)	(0.0004)	(0.0004)	(0.0005)
Constant	−0.088	−0.236***	−0.134***	−0.004
	(0.073)	(0.081)	(0.034)	(0.062)
Observations	4,638	4,630	4,646	4,588
R^2	0.337	0.238	0.211	0.342
Adjusted R^2	0.336	0.237	0.210	0.341

Note: *p<0.1; **p<0.05; ***p<0.01

Table SM13: Linear regressions of vote choice on perceived government lottery variance and mean (GLES Panel 2021, Wave 17 (Pre-Release)), LPM.

- No propensity to vote, but nominal vote choice
- Coalition scalometer
  - (1) -5 not desirable at all
    ...
    (11) +5 very desirable
  - Regardless of which coalition governs and how likely the following coalitions are at the moment, how desirable are these coalition governments at federal level for you personally?
  - (A) Coalition of CDU/CSU and SPD
    (E) Coalition of CDU/CSU and Bündnis 90/Die Grünen

(F) Coalition of Bündnis 90/Die Grünen, SPD and FDP
(G) Coalition of CDU/CSU, Bündnis 90/Die Grünen and FDP
(H) Coalition of Bündnis 90/Die Grünen, SPD and Die Linke

- Perceived government probabilities

  – (1) definitely not
  (2) probably not
  (3) maybe
  (4) probably
  (5) definitely

  – Imagine that the following parties had a majority in the Bundestag after the 2017 federal election. Do you think that these parties would then be willing to enter into a coalition with each other?

  – (A) Coalition of CDU/CSU and SPD
  (E) Coalition of CDU/CSU and Bündnis 90/Die Grünen
  (F) Coalition of Bündnis 90/Die Grünen, SPD and FDP
  (G) Coalition of CDU/CSU, Bündnis 90/Die Grünen and FDP
  (H) Coalition of Bündnis 90/Die Grünen, SPD and Die Linke

B.2.10 Netherlands: Dutch Parliamentary Election Study

2006

	Dependent variable: Vote for		
	PvdA	CDA	VVD
	(1)	(2)	(3)
Government Lottery Variance	−0.083	−0.245***	0.070
	(0.079)	(0.073)	(0.075)
Government Lottery Mean	0.238***	0.171***	0.140***
	(0.044)	(0.044)	(0.037)
Rating Party PvdA	0.087***		
	(0.006)		
Rating Party CDA		0.098***	
		(0.006)	
Rating Party VVD			0.068***
			(0.006)
Gender	0.028	−0.028	0.047***
	(0.020)	(0.021)	(0.018)
Edu lev. 2	−0.115**	0.050	−0.052
	(0.049)	(0.052)	(0.044)
Edu lev. 3	−0.093*	−0.060	0.032
	(0.056)	(0.059)	(0.051)
Edu lev. 4	−0.172***	0.018	−0.013
	(0.047)	(0.050)	(0.043)
Edu lev. 5	−0.152***	−0.035	0.051
	(0.048)	(0.050)	(0.043)
Age	0.001	0.004***	−0.001
	(0.001)	(0.001)	(0.001)
Constant	−0.337***	−0.565***	−0.276***
	(0.069)	(0.069)	(0.059)
Observations	1,262	1,301	1,287
R^2	0.299	0.323	0.269
Adjusted R^2	0.294	0.318	0.264

Note: *p<0.1; **p<0.05; ***p<0.01

Table SM14: Linear regressions of propensities to vote on perceived government lottery variance and mean (Dutch Parliamentary Election Study 2006)

- No suitable propensity to vote, but nominal vote choice
- Coalition scalometer
    - 1 very undesirable
      ...
      7 very desirable
    - And now I would like to ask you something about the future government. Could you tell me to what extend you think it is desirable or undesirable that parties will form the government together?

- CDA and VVD
  CDA and PvdA
  PvdA, SP and GroenLinks
  PvdA and VVD

- Perceived government probabilities

  - 1 very unlikely
    ...
    10 very likely

  - Now I would also like to ask you how probable or improbable it is according to you that the mentioned parties will form a new government after the elections.
  - CDA and VVD
    CDA and PvdA
    PvdA, SP and GroenLinks
    PvdA and VVD

B.2.11 Sweden: Swedish National Election Study

2010

- No propensity to vote, but nominal vote choice
- Coalition scalometer

  - 0 strongly dislike
    ...
    10 strongly like
  - Please rate each of the following government coalitions that could be formed after the election on a scale from 0 to 10, where 0 means you really dislike the coalition and 10 means you really like it
  - 1 M, FP, C and KD
    2 S, MP and V
    3 M, FP, C, KD and MP
    4 S, MP, V and C

    V=Left party, S=Social democrats, C=Centre party, FP=People's party liberals, M=Moderate party, KD=Christian democrats, MP=Green party

- Perceived government probabilities

  - 0 not likely at all
    ...
    10 very likely

  - How likely is it that the following parties will form a government after the election, where 0 means very unlikely and 10 means very likely?
  - 1 M, FP, C and KD
    2 S, MP and V
    3 M, FP, C, KD and MP
    4 S, MP, V and C

    V=Left party, S=Social democrats, C=Centre party, FP=People's party liberals, M=Moderate party, KD=Christian democrats, MP=Green party

	M	FP	C	KD	S	MP	V
				Dependent variable: Vote for			
	M	FP	C	KD	S	MP	V
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Government Lottery Variance	0.190	−0.326	−0.077*	0.286	0.098	−0.243***	0.099
	(0.588)	(0.382)	(0.044)	(0.530)	(0.342)	(0.048)	(0.304)
Government Lottery Mean	−0.296***	−0.105***	−0.063***	−0.103***	−0.097**	−0.224***	−0.207***
	(0.072)	(0.034)	(0.022)	(0.022)	(0.045)	(0.040)	(0.050)
Rating Party M	0.109***						
	(0.008)						
Rating Party FP		0.056***					
		(0.006)					
Rating Party C			0.040***				
			(0.005)				
Rating Party KD				0.042***			
				(0.005)			
Rating Party S					0.089***		
					(0.006)		
Rating Party MP						0.071***	
						(0.005)	
Rating Party V							0.076***
							(0.007)
Gender	0.020	−0.016	−0.017	−0.018	−0.045**	0.030	0.055***
	(0.023)	(0.020)	(0.016)	(0.015)	(0.022)	(0.023)	(0.020)
Edu lev. 2	−0.170**	−0.137***	0.007	0.183***	−0.367***	0.201***	−0.174***
	(0.073)	(0.031)	(0.049)	(0.032)	(0.069)	(0.044)	(0.062)
Edu lev. 3	−0.179***	−0.165***	−0.096***	0.239***	−0.435***	0.225***	−0.157***
	(0.048)	(0.037)	(0.026)	(0.043)	(0.054)	(0.045)	(0.044)
Edu lev. 4	−0.130***	−0.060**	−0.057**	0.208***	−0.502***	0.197***	−0.103***
	(0.034)	(0.031)	(0.025)	(0.033)	(0.039)	(0.033)	(0.038)
Edu lev. 5	−0.068*	−0.145***	−0.089***	0.210***	−0.498***	0.266***	−0.079*
	(0.038)	(0.031)	(0.026)	(0.036)	(0.043)	(0.040)	(0.043)
Edu lev. 6	−0.113***	−0.093***	−0.106***	0.232***	−0.576***	0.239***	−0.044
	(0.028)	(0.023)	(0.019)	(0.033)	(0.034)	(0.032)	(0.041)
Edu lev. 7	−0.159***	−0.073***	−0.067***	0.224***	−0.574***	0.255***	−0.064*
	(0.020)	(0.019)	(0.015)	(0.030)	(0.029)	(0.027)	(0.035)
Edu lev. 8	−0.255***	−0.021	−0.051	0.244***	−0.584***	0.256***	−0.057
	(0.049)	(0.055)	(0.041)	(0.046)	(0.049)	(0.052)	(0.051)
Age	0.001	0.001	0.0004	−0.0002	0.002***	−0.002**	0.001
	(0.001)	(0.001)	(0.001)	(0.0005)	(0.001)	(0.001)	(0.001)
Constant	−0.051	−0.030	−0.011	−0.242***	0.265***	−0.247***	−0.060
	(0.045)	(0.041)	(0.030)	(0.039)	(0.054)	(0.054)	(0.052)
Observations	935	938	936	933	938	931	938
R^2	0.414	0.203	0.143	0.182	0.405	0.279	0.341
Adjusted R^2	0.407	0.193	0.132	0.172	0.397	0.269	0.332

Note: *p<0.1; **p<0.05; ***p<0.01

Table SM15: Linear regressions of vote choice on perceived government lottery variance and mean (The 2010 Internet Campaign Panel, Sweden)

B.2.12 Self-Conducted Surveys: Sweden 2018 and New Zealand 2020

	Dependent variable: Propensity to vote for		
	Moderates *(Sweden 2018)*	SAP *(Sweden 2018)*	Labour *(NZ 2020)*
Government Lottery Variance	-0.127***	-0.256***	-0.242**
	(0.039)	(0.062)	(0.095)
Government Lottery Mean	0.163***	0.157***	0.428***
	(0.023)	(0.023)	(0.062)
Rating Party Moderates	0.142***		
	(0.004)		
Rating Party SAP		0.155***	
		(0.004)	
Rating Party NZ			0.130***
			(0.010)
Gender	0.003	0.009	0.041*
	(0.010)	(0.010)	(0.022)
Edu lev. 2	−0.125	−0.116	
	(0.079)	(0.081)	
Edu lev. 3	−0.095	−0.114	
	(0.078)	(0.079)	
Edu lev. 4	−0.080	−0.182**	
	(0.077)	(0.079)	
Edu lev. 5	−0.081	−0.142*	
	(0.077)	(0.079)	
Edu lev. 6	−0.118	−0.129	
	(0.079)	(0.081)	
Edu lev. 7	−0.098	−0.156**	
	(0.077)	(0.079)	
Edu lev. 8	−0.098	−0.192**	
	(0.077)	(0.079)	
Edu lev. 9	−0.148*	−0.191**	
	(0.081)	(0.083)	
Edu lev. 10			−0.066
			(0.192)
Edu lev. 11			−0.072
			(0.165)
Edu lev. 12			−0.093
			(0.166)
Edu lev. 13			−0.047
			(0.165)
Edu lev. 14			−0.021
			(0.169)
Edu lev. 15			−0.076
			(0.164)
Age Lev. 2	−0.020	−0.013	0.001
	(0.020)	(0.021)	(0.034)
Age Lev. 3	−0.004	0.030	0.052
	(0.020)	(0.020)	(0.033)
Age Lev. 4	−0.004	0.012	0.029
	(0.020)	(0.020)	(0.036)
Age Lev. 5	0.004	0.026	0.035
	(0.020)	(0.020)	(0.040)
Age Lev. 6	−0.007	0.020	−0.103**
	(0.021)	(0.021)	(0.042)
Constant	−0.168**	−0.164*	−0.260
	(0.081)	(0.084)	(0.169)
Observations	1,736	1,734	426
R^2	0.696	0.691	0.715
Adjusted R^2	0.695	0.690	0.710

Table SM16: Linear regressions of propensities to vote on perceived government lottery variance and mean. We control for the party evaluation as well as gender, age, and education. Standard errors in parentheses, p-value: *p<0.1; **p<0.05; ***p<0.01.

Sweden 2018:

- Propensity to vote

- How likely is it that you will vote for the following parties?
- 1 Not likely at all

  ...

  7 Very likely
- Left Party; Swedish Social Democratic Party; Swedish Social Democratic Party; Center Party; The Liberals; Christian Democrats; Moderate Party; Sweden Democrats party, KD=Christian democrats, MP=Green party

- Coalition scalometer

  - What do you think of the following coalitions?
  - 1 strongly dislike

    ...

    7 strongly like
  - 1 Red-Green Coalition (Social Democrats and Green Party)

    2 The Alliance (Moderates, Center Party, the Liberals and the Christian Democrats)

    3 Center Coalition (Social Democrats, Green Party, Center)

    4 Right-wing Coalition (Moderates and the Sweden Democrats)

- Perceived government probabilities

  - 0 not likely at all

    ...

    10 very likely

  - Suppose that the Swedish Social Democratic Party is part of the next government. Which coalition government is the party likely to be part of? Red-Green Coalition (Social Democrats and Green Party) ; Center Coalition (Social Democrats, Green Party, Center Party and the Liberals)
  - Suppose that the Swedish Social Democratic Party is part of the next government. Which coalition government is the party likely to be part of? The Alliance (Moderates, Center Party, the Liberals and the Christian Democrats) ;Right-wing Coalition (Moderates and the Sweden Democrats)

New Zealand 2020:

- Propensity to vote

  - As you might know, an election is coming-up this week. How likely is it that you would vote for the following parties?
  - 1 Not likely at all

    ...

    7 Very likely
  - Labour; National; Green; Center Party; ACT; NZ First

- Coalition scalometer

  - What do you think of the following governments?
  - 1 strongly dislike

    ...

    7 strongly like
  - 1 Single-party government Labour

    2 Coalition government Labour - Green

    3 Coalition government Labour - ACT

    4 Coalition government Labour - NZ First

- Perceived government probabilities

- 0 not likely at all

    ...

    7 very likely

- Suppose Labour is part of the next government. Which government is the party likely to be part of? Single-party government Labour, Coalition government Labour - Green, Coalition government Labour - ACT, Coalition government Labour - NZ First

B.2.13 Meta-Analysis

	Dependent Variable	
	Propensity to vote	Vote choice (yes/no)
Government Lottery Variance	-0.111***	-0.172***
	(0.007)	(0.031)
N (Studies)	4	62

Table SM17: Meta-analysis estimates are based on inverse variance weighting (Rice et al., 2018) from models for all survey data sources (See SM B for single studies' tables).

C Experimental Study

C.1 Ethical Considerations

Our research complies with GDPR requirements and the relevant ethical regulations, as documented in the Principles and Guidance for Human Subjects Research approved by the APSA Council. The research design was exempt from review by the local ethics committee, as the risks to participants were assessed to be minimal or non-existent. The study involved participants answering questions related to their political preferences and basic demographic information, and the data collected was anonymized, further minimizing risks. The experimental manipulation only resulted in individualized questions, posing no significant risks to participants. In the following, we discuss some additional considerations.

- **Participant recruitment**: In partnership with the online survey firm respondi, panelists were invited to participate in a study on the German federal election. Participation was voluntary. The survey design and programming were implemented on our end. The access panel provider and its local partners compensate their participants with their standard rates of cash transfers or platform-specific currencies for voluntary participation.

- **Informed Consent**: At the beginning of the survey, we obtained voluntary and informed consent from participants. We explain the research project, study purpose, the risk and benefits and described direct contact details to inquire further information.

- **Deception**: The research design does not use any form of deception. The questionnaire outlines the hypothetical nature ("Imagine that ...") of the question under experimental variation.

- **Harm and impact**: The research design has no conceivable harmful impact on the participants. The manipulation six hypothetical individualized questions that do not have follow-up consequences or lead to risks for participants.

- **Confidentiality**: The identities of research participants are kept confidential. Contacting details are kept with the survey firm. The anonymized response data is stored with the researchers. The anonymized data will be shared with the research community.

C.2 Quotas

| var	n	prop
Gender		
Männlich	775	0.49
Weiblich	798	0.51
Divers	4	0.00
Region		
Baden-Württemberg	170	0.11
Bayern	212	0.13
Berlin	80	0.05
Brandenburg	43	0.03
Bremen	15	0.01
Hamburg	44	0.03
Hessen	124	0.08
Mecklenburg-Vorpommern	33	0.02
Niedersachsen	150	0.10
Nordrhein-Westfalen	345	0.22
Rheinland-Pfalz	87	0.06
Saarland	17	0.01
Sachsen	108	0.07
Sachsen-Anhalt	51	0.03
Schleswig-Holstein	59	0.04
Thüringen	37	0.02
Age		
Age 18 - 29	304	0.19
Age 30 - 39	274	0.17
Age 40 - 49	251	0.16
Age 50 - 59	322	0.20
Age 60 - 75	404	0.26
Age > 75	22	0.01

C.3 Additional Results
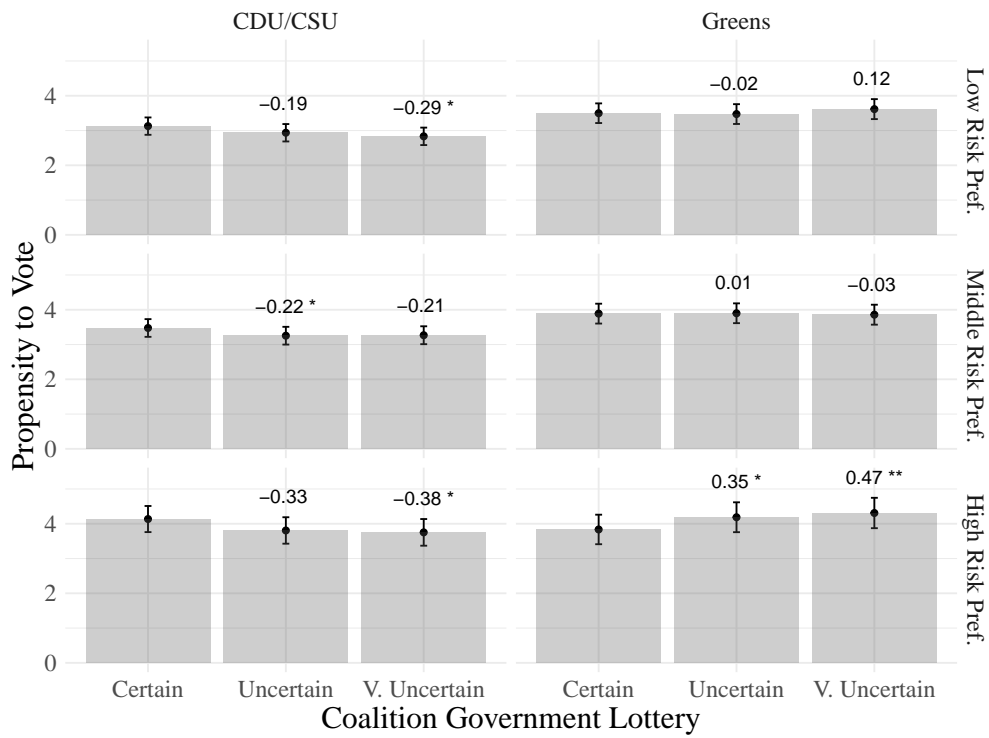
Figure SM3: Average propensity to vote for the CDU/CSU and the Green Party for the different scenarios conditional on risk preferences of candidate. The values show treatment effects of the uncertain and very uncertain condition compared to the certain condition, alongside their p-value ($^{***}p < 0.001$; $^{**}p < 0.01$; $^{*}p < 0.05$). Regression Table SM19.
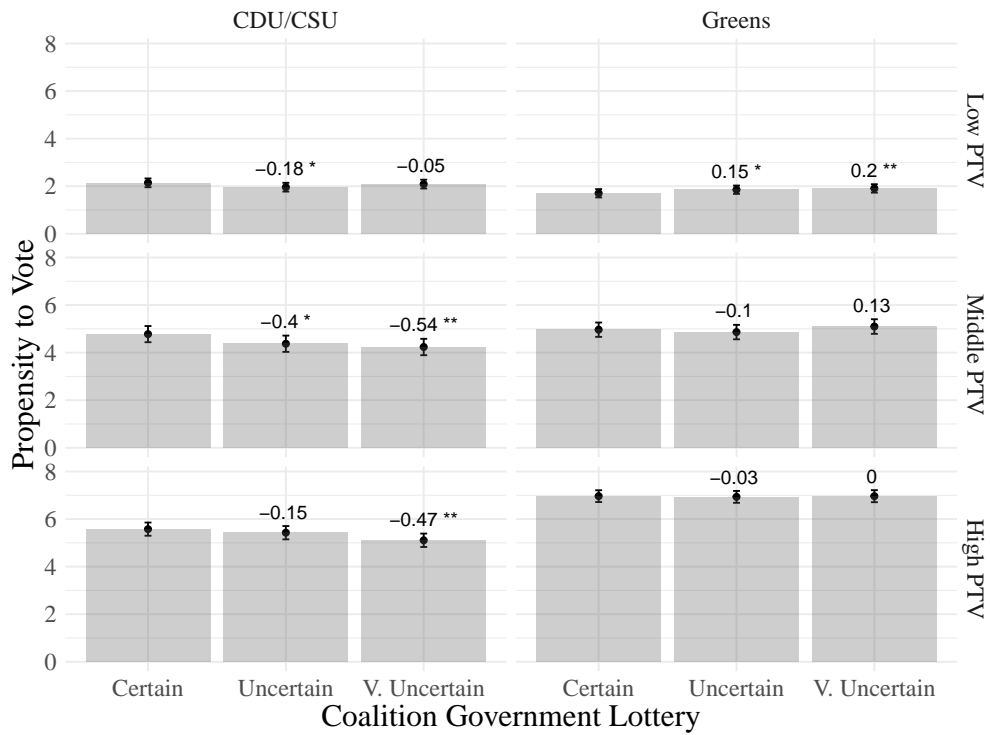
Figure SM4: Average propensity to vote for the CDU/CSU and the Green Party for the different scenarios and conditional on propensity to vote (PTV) for party, with 95% confidence intervals. The values show treatment effects of the uncertain and very uncertain condition compared to the certain condition, alongside their p-value (***$p < 0.001$; **$p < 0.01$; *$p < 0.05$). Regression Table SM20.

C.4 Regression Tables

	PTV CDU/CSU			PTV Greens		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Uncertain Coal. Lottery	-0.23^{***}	-0.22^{**}	-0.23^{***}	0.05	0.05	0.05
	(0.07)	(0.08)	(0.07)	(0.05)	(0.07)	(0.05)
Very Uncertain Coal. Lottery	-0.27^{***}	-0.25^{**}	-0.27^{***}	0.12	0.13	0.11
	(0.08)	(0.09)	(0.08)	(0.06)	(0.07)	(0.06)
Respondent Fixed Effects		X			X	
Scenario Fixed Effects			X			X
N	4086	4086	4086	3682	3682	3682

$^{***}p < 0.001$; $^{**}p < 0.01$; $^{*}p < 0.05$

Table SM18: Results from experimental study. Treatment effects of the uncertain and very uncertain condition compared to the certain condition on the propensity to vote (PTV) for the CDU/CSU and the Green Party for different model specifications. Standard errors in parentheses, alongside their p-value ($^{***}p < 0.001$; $^{**}p < 0.01$; $^{*}p < 0.05$)

| | PTV CDU/CSU | PTV Greens |
	Model 1	Model 1
Uncertain Coal. Lottery	−0.19	−0.02
	(0.10)	(0.08)
Very Uncertain Coal. Lottery	−0.29*	0.12
	(0.12)	(0.09)
Middle Risk Preferences	0.35*	0.39
	(0.18)	(0.21)
High Risk Preferences	1.01***	0.34
	(0.24)	(0.26)
Uncertain X Middle Risk Pref.	−0.03	0.04
	(0.15)	(0.12)
V. Uncertain X Middle Risk Pref.	0.09	−0.15
	(0.17)	(0.13)
Uncertain X High Risk Pref.	−0.14	0.38*
	(0.20)	(0.17)
V. Uncertain X High Risk Pref.	−0.09	0.36
	(0.23)	(0.19)
N	3940	3549

$^{***}p < 0.001$; $^{**}p < 0.01$; $^{*}p < 0.05$

Table SM19: Results from experimental study conditional on general risk preferences. Treatment effects of the uncertain and very uncertain condition, conditional on general risk preferences, on the propensity to vote (PTV) for the CDU/CSU and the Green Party. Standard errors in parentheses, alongside their p-value ($^{***}p < 0.001$; $^{**}p < 0.01$; $^{*}p < 0.05$)

	PTV DU/CSU	PTV Greens
	Model 1	Model 1
Uncertain Coal. Lottery	−0.18*	0.15*
	(0.08)	(0.07)
Very Uncertain Coal. Lottery	−0.05	0.20**
	(0.09)	(0.08)
Middle PTV Party	2.64***	3.26***
	(0.17)	(0.17)
High PTV Party	3.43***	5.26***
	(0.18)	(0.16)
Uncertain X High PTV Party	0.03	−0.18
	(0.18)	(0.14)
V. Uncertain X High PTV Party	−0.41*	−0.21
	(0.20)	(0.15)
N	4031	3631

$^{***}p < 0.001$; $^{**}p < 0.01$; $^{*}p < 0.05$

Table SM20: Results from experimental study conditional on prior propensity to vote for the party. Treatment effects of the uncertain and very uncertain condition, conditional on prior propensity to vote (PTV) for the party, on the propensity to vote for the CDU/CSU and the Green Party. Standard errors in parentheses, alongside their p-value ($^{***}p < 0.001$; $^{**}p < 0.01$; $^{*}p < 0.05$)

C.5 Credibility of the vignettes

In the pretest, a majority indicated no difficulties in understanding the vignettes. Only 7 out of 506 respondents indicated that they had difficulties understanding or believing the experimental vignettes ("Ich weiss es nicht", "einige unwahrscheinlichen Szenarien dabei", "weiß nicht", "Es ist schwierig die jeweiligen politischen Absichten nachzuvollziehen, wenn eine Koalition zwischen den genannten Parteien bestehen würde", "Ich habe echt zu wenig Ahnung. Ich habe aus dem Bauch raus entschieden", "Nein, aber es sind teilweise schwachsinnige Konstellationen die es so niemals geben wird.", "Generell für mich scgwer zu verstehhen").
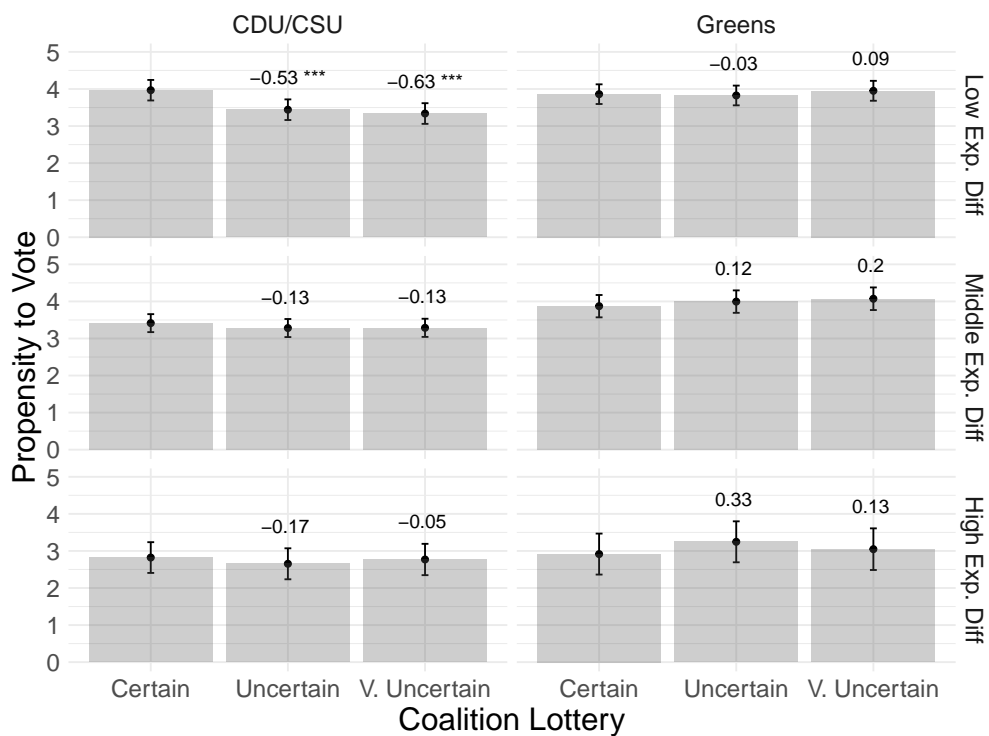
Figure SM5: Propensity to vote for the CDU/CSU and the Green Party for the different scenarios and conditional on pre-treatment coalition expectations. Regression Table SM21.

We further study if the effects are particularly pronounced, when the vignettes do not strongly differ from the respondents' prior coalition expectation. Strong deviations of the probabilities in the vignette and respondent's prior expectation could alter the vignette non-credible. The difference in expectations was measured as the euclidean distance between the vector of pre-treatment expectations and the vector of expectations shown in the vignette. Figure SM5 confirms that the effects are particular strong among respondents for which the vignette probabilities do not differ to heavily from the prior expectations.

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	PTV CDU/CSU	PTV Greens
	Model 1	Model 1
Uncertain Coal. Lottery	−0.53**	−0.03
	(0.20)	(0.19)
Very Uncertain Coal. Lottery	−0.63**	0.09
	(0.20)	(0.19)
Middle Exp. Diff.	−0.55**	0.01
	(0.19)	(0.20)
High Exp. Diff.	−1.15***	−0.94**
	(0.25)	(0.31)
Uncertain X Middle Exp. Diff.	0.39	0.16
	(0.27)	(0.29)
V. Uncertain X Middle Exp. Diff.	0.50	0.11
	(0.27)	(0.29)
Uncertain X High Exp. Diff.	0.36	0.37
	(0.36)	(0.44)
V. Uncertain X High Exp. Diff.	0.58	0.04
	(0.36)	(0.45)
N	3702	3359

$^{***}p < 0.001$; $^{**}p < 0.01$; $^{*}p < 0.05$

Table SM21: Results from experimental study conditional on difference in expectations in the coalition likelihoods. Treatment effects of the uncertain and very uncertain condition, conditional on difference in expectations in the coalition likelihoods, on the propensity to vote (PTV) for the CDU/CSU and the Green Party. Standard errors in parentheses, alongside their p-value ($^{***}p < 0.001$; $^{**}p < 0.01$; $^{*}p < 0.05$)

C.6 Robustness Check: Excluding AfD-Vignettes

	PTV CDU/CSU		
	Model 1	Model 2	Model 3
Uncertain Coal. Lottery	-0.44^*	-0.41	-0.41^*
	(0.17)	(0.21)	(0.17)
Very Uncertain Coal. Lottery	-0.21	-0.18	-0.18
	(0.19)	(0.23)	(0.19)
Respondent Fixed Effects		X	
Scenario Fixed Effects			X
N	547	547	547

$^{***}p < 0.001$; $^{**}p < 0.01$; $^*p < 0.05$

Table SM22: Results from experimental study, when excluding AfD vignettes. Treatment effects of the uncertain and very uncertain condition compared to the certain condition on the propensity to vote (PTV) for the CDU/CSU for different model specifications. Standard errors in parentheses, alongside their p-value ($^{***}p < 0.001$; $^{**}p < 0.01$; $^*p < 0.05$)

These model results are based on only those experimental subjects who did not receive a vignette in which the AfD appeared in the least favorite government scenario. Also, only experimental subjects with a low expectation difference (see section above) were considered, as we expect the effects to be most pronounced for this group.

C.7 Anonymous Version of the Pre Analysis Plan

Preregistration plan for:

Coalition-Directed Voting and Risk Preferences
Coalition Vignette Experiment

Study Information

1. **Title**

   Coalition-Directed Voting and Risk Preferences - Coalition Vignette Experiment

2. **Authors**

3. **Description**

   We field a survey for studying the role of risk preferences in coalition-directed voting decisions. The survey contains two within-subject experiments that allow us to test the hypothesis that voters are on average risk averse when it comes to coalition-directed voting. Moreover, the experiment allows us to investigate whether individual general preferences towards risks matter for coalition-directed voting.

4. **Hypotheses**

   Hypothesis 1 (Average Voter is Risk Averse): On average, voters are more likely to vote for a party if the variance of the party-specific coalition lottery is lower compared to a scenario in which this variance is higher, holding constant the mean of the party-specific coalition lottery.

   Hypothesis 2 Risk Preferences (Risk Averse): Voters who are less willing to accept risks are more likely to vote for a party if the variance of the party-specific coalition lottery is lower compared to a scenario in which this variance is higher, holding constant the mean of the party-specific coalition lottery.

   Hypothesis 3 Risk Preferences (Risk Seeking): Voters who are more willing to accept risks are more likely to vote for a party if the variance of the party-specific coalition lottery is higher compared to a scenario in which this variance is lower, holding constant the mean of the party-specific coalition lottery.

   Hypothesis 4 Risk Aversion Conditional on Propensity to Vote for Party: Voters who have some propensity to vote for a party are more likely to vote for that party if the variance of the party-specific coalition lottery is lower compared to a scenario in which this variance is higher, holding constant the mean of the party-specific coalition lottery. For voters who have very low propensity to vote for the party the variance of the party-specific coalition lottery does not affect the propensity to vote for the party.

Design Plan

5. Study type

We devise two within-subject experiments fielded in Germany.

6. Blinding

No blinding is involved in this study.

7. Study design

We use a within-subject vignette design. Respondents see three vignette questions with individually calculated coalition likelihoods once for the CDU/CSU and once for the Greens. After each vignette, respondents report their propensity to vote for the respective party. The individual coalition likelihoods for the parties are calculated based on respondents' reported ratings for the coalitions and are calculated to be mean spread preserving with increasing variance in the party-specific coalition lottery. This means that the expectation is held constant, while we present increasing variance in the party-specific coalition lotteries. We label the three scenarios, as certain, uncertain, and very uncertain as the variance is sequentially increasing. This study design allows us to estimate the effect of increasing party-specific coalition lotteries on the propensity to vote and hold the mean payoff of the party-specific coalition lotteries constant.

8. Randomization

-

Sampling Plan

9. Existing data

No previously existing data will be analysed.

10. Data collection procedures

Participants will be recruited from online access panels administered by Respondi. No incentives other than the participation incentives provided by Respondi will be given. Participants must be eligible to vote in the 2021 German federal election and must consent to data collection. Panelists will be sampled according to quotas of gender, age and education.

11. Sample size

The sample will consist of 1500 respondents.

Variables

We measure socio-demographic characteristics, specifically age, state of residence, gender, education, eligibility to vote in the 2021 German federal election, left-right placement of parties, left-right self-placement, political interest, political knowledge and risk preferences.

Variable	Question	Scale
Age	Geben Sie bitte Ihr Alter an.	18-29; 30-39; 40-49; 50-59; 60-75; 76+
State of residence	In welchem Bundesland haben Sie Ihren Hauptwohnsitz?	Baden-Württemberg; Bayern; Berlin; Brandenburg; Bremen; Hamburg; Hessen; Mecklenburg-Vorpommern; Niedersachsen; Nordrhein-Westfalen; Rheinland-Pfalz; Saarland, Sachsen; Sachsen-Anhalt; Schleswig-Holstein; Thüringen
Gender	Geben Sie bitte Ihr Geschlecht an.	Männlich; weiblich; divers
Education	Welchen höchsten allgemeinbildenden Schulabschluss haben Sie?	Schule beendet ohne Abschluss; Hauptschulabschluss, Volksschulabschluss, Abschluss der polytechnischen Oberschule 8. oder 9. Klasse; Realschulabschluss, Mittlere Reife, Fachschulreife oder Abschluss der polytechnischen Oberschule 10. Klasse; Fachhochschulreife (Abschluss einer Fachoberschule etc.); Abitur bzw. erweiterte Oberschule mit

		Abschluss 12. Klasse (Hochschulreife); Anderen Schulabschluss, und zwar __; Bin noch Schüler
Eligibility to vote in the 2021 German federal election	Sind Sie für die deutsche Bundestagswahl 2021 wahlberechtigt?	Ja; nein; weiß nicht
Left-right placement of parties	In der Politik reden die Leute häufig von "links" und "rechts". Wo würden Sie die folgenden Parteien einordnen? ● CDU/CSU ● Bündnis 90/Grüne ● SPD ● FDP ● AfD ● Linke	0 - Links 10 - Rechts
Left-right self-placement	Wo würden Sie sich selbst einordnen?	0 - Links 10 - Rechts
Political interest	Einmal ganz allgemein gesprochen: Wie stark interessieren Sie sich für Politik?	Sehr stark; stark; mittelmäßig; weniger stark; überhaupt nicht
Political Knowledge 1	Bei der Bundestagswahl haben Sie zwei Stimmen, eine Erststimme und eine Zweitstimme. Welche der beiden Stimmen ist ausschlaggebend für die Sitzverteilung im Bundestag?	Die Erststimme; die Zweitstimme; beide sind gleich wichtig; das ist abhängig von den Bestimmungen des jeweiligen Bundeslandes; weiß nicht
Political Knowledge 2	Wer ist der/die Bundesminister/in für Familie, Senioren, Frauen und Jugend?	Alexander Dobrindt; Franziska Giffey; Christine Lambrecht; Helge Braun; weiß nicht
Political Knowledge 3	Bei Bundestagswahlen entscheiden sich die Wähler/innen häufig anhand der	CDU/CSU; FDP; Bündnis 90/Die Grünen;

	Positionen, die die Parteien zu verschiedenen Fragen einnehmen. Anlässlich der Bundestagswahl 2017 äußerten die Parteien ihre Positionen zu verschiedenen Themen und Problemen. Welche der folgenden Parteien sprach sich 2017 gegen eine Erhöhung des Spitzensteuersatzes aus?	Linke; weiß nicht
Risk Preferences	Nun kommen wir zu einem anderen Thema. Wie schätzen Sie sich persönlich ein? Sind Sie im Allgemeinen ein risikobereiter Mensch oder versuchen Sie, Risiken zu vermeiden?	0 - Gar nicht risikobereit 10 - Sehr risikobereit

12. Experiment 1: Manipulation and outcome measure

Respondents are successively shown seven screens containing hypothetical coalition formation scenarios for the CDU/CSU.

Screen 1:

Nach der Bundestagswahl wird es wahrscheinlich eine Koalitionsregierung geben. Im Folgenden würden wir gerne Ihre Meinung zu verschiedenen Koalitionsregierungen der **CDU/CSU** erfahren.

Unabhängig vom Ergebnis der Bundestagswahl, für wie wünschenswert halten Sie persönlich die folgenden Koalitionsregierungen?

- CDU/CSU + SPD
- CDU/CSU + Bündnis 90/Grüne
- CDU/CSU + FDP
- CDU/CSU + AfD
- CDU/CSU + Bündnis 90/Grüne + FDP
- CDU/CSU + SPD + FDP
- CDU/CSU + FDP + AfD

[-5 - Überhaupt nicht wünschenswert, … , +5 - Sehr wünschenswert]

Screen 2:

Als nächstes möchten wir Sie gerne zu Ihrer Einschätzung über die möglichen Koalitionsregierungen der CDU/CSU befragen.

Angenommen, die CDU/CSU ist Teil der nächsten Regierung. An welcher Koalitionsregierung wird die CDU/CSU wahrscheinlich beteiligt sein?

- CDU/CSU + SPD
- CDU/CSU + Bündnis 90/Grüne
- CDU/CSU + FDP
- CDU/CSU + AfD
- CDU/CSU + Bündnis 90/Grüne + FDP
- CDU/CSU + SPD + FDP
- CDU/CSU + FDP + AfD

[0 - Sehr unwahrscheinlich, … , 10 - Sehr wahrscheinlich]

Screen 3:

Wie wahrscheinlich ist es, dass Sie die CDU/CSU bei der Bundestagswahl 2021 wählen werden?

[0 - Sehr unwahrscheinlich, … , 10 - Sehr wahrscheinlich]

Screen 4:

Im Folgenden stellen wir Ihnen drei verschiedene Situationen vor. Wir werden Sie jedes Mal fragen, wie wahrscheinlich es ist, dass Sie für die CDU/CSU stimmen würden.

Die verschiedenen Situationen geben Wahrscheinlichkeiten an, dass die CDU/CSU in bestimmte Regierungen eintritt.
- 0% für eine Koalition bedeutet, dass die CDU/CSU ganz sicher nicht in dieser Konstellation enden wird.
- 100% für eine Koalition bedeutet, dass die CDU/CSU sicher in dieser Konstellation enden wird, vorausgesetzt die CDU/CSU regiert überhaupt.
- Wenn zwei Koalitionen etwa eine 50%-ige Wahrscheinlichkeit aufweisen, treten beide Konstellationen gleich wahrscheinlich ein.

Screen 5:

Stellen Sie sich vor, die CDU/CSU sagt, dass sie **nach der Wahl nur in eine Koalition** [*Coalition with medium rating*] **eintreten wird** und sie alle anderen Koalitionen ausschließt. Daraus würde sich folgende Wahrscheinlichkeit ergeben, dass die CDU/CSU diese Koalition bilden könnte:

● Koaltionsregierung [*Coalition with medium rating*]: 100%
Wie wahrscheinlich ist es, dass Sie in dieser Situation die CDU/CSU bei der Bundestagswahl 2021 **wählen** würden?

[0 - Sehr unwahrscheinlich, … , 10 - Sehr wahrscheinlich]

Screen 6:

Stellen Sie sich nun vor, die CDU/CSU **würde nicht klar sagen, in welche Koalition sie nach der Wahl eintreten möchte**. Daraus würden sich folgende Wahrscheinlichkeiten ergeben, dass die CDU/CSU unterschiedliche Koalitionsregierungen bilden könnte:

● Koaltionsregierung [*Coalition with high rating*]: [*Probability 1*]%
● Koaltionsregierung [*Coalition with medium rating*]: [*Probability 2*]%
● Koaltionsregierung [*Coalition with low rating*]: [*Probability 3*]%

Wie wahrscheinlich ist es, dass Sie in dieser Situation die CDU/CSU bei der Bundestagswahl 2021 **wählen** würden?

[0 - Sehr unwahrscheinlich, … , 10 - Sehr wahrscheinlich]

Screen 7:

Stellen Sie sich nun eine andere Situation vor, in der die CDU/CSU **ebenfalls nicht klar sagt, in welche Koalition sie nach der Wahl eintreten möchte**. Daraus würden sich folgende Wahrscheinlichkeiten ergeben, dass die CDU/CSU unterschiedliche Koalitionsregierungen bilden könnte.

● Koaltionsregierung [*Coalition with high rating*]: [*Probability 4*]%

● Koaltionsregierung [*Coalition with medium rating*]: [*Probability 5*]%

● Koaltionsregierung [*Coalition with low rating*]: [*Probability 6*]%

Wie wahrscheinlich ist es, dass Sie in dieser Situation CDU/CSU bei der Bundestagswahl 2021 **wählen** würden?

[0 - Sehr unwahrscheinlich, … , 10 - Sehr wahrscheinlich]

13.   Experiment 2: Manipulation and outcome measure

Respondents are successively shown seven screens containing hypothetical coalition formation scenarios for the Greens.

Screen 1:

Darüber hinaus möchten wir sie auch noch zu Ihrer Einschätzung über die möglichen Koalitionsregierungen von **Bündnis 90/Die Grünen** befragen.

Unabhängig vom Ergebnis der Bundestagswahl, für wie wünschenswert halten Sie persönlich die folgenden Koalitionsregierungen?

- CDU/CSU + Bündnis 90/Grüne
- Bündnis 90/Grüne + SPD
- Bündnis 90/Grüne + SPD + FDP
- Bündnis 90/Grüne + SPD + Linke
- CDU/CSU + Bündnis 90/Grüne + FDP

[-5 - Überhaupt nicht wünschenswert, … , +5 - Sehr wünschenswert]

Screen 2:

Angenommen, Bündnis 90/Die Grünen sind Teil der nächsten Regierung. An welcher Koalitionsregierung werden Bündnis 90/Die Grünen wahrscheinlich beteiligt sein?

- CDU/CSU + Bündnis 90/Grüne
- Bündnis 90/Grüne + SPD
- Bündnis 90/Grüne + SPD + FDP
- Bündnis 90/Grüne + SPD + Linke
- CDU/CSU + Bündnis 90/Grüne + FDP

[0 - Sehr unwahrscheinlich, … , 10 - Sehr wahrscheinlich]

Screen 3:

Wie wahrscheinlich ist es, dass Sie Bündnis 90/Die Grünen bei der Bundestagswahl 2021 wählen werden?

[0 - Sehr unwahrscheinlich, … , 10 - Sehr wahrscheinlich]

Screen 4:

Im Folgenden stellen wir Ihnen erneut drei verschiedene Situationen vor - diesmal geht es um Bündnis 90/Die Grünen. Wir werden Sie jedes Mal fragen, wie wahrscheinlich es ist, dass Sie für Bündnis 90/Die Grünen stimmen würden.

Screen 5:

Stellen Sie sich vor, Bündnis 90/Die Grünen sagen, dass sie **nach der Wahl nur in eine Koalition** [*Coalition with medium rating*] **eintreten werden** und sie alle anderen Koalitionen ausschließen. Daraus würde sich folgende Wahrscheinlichkeit ergeben, dass

Bündnis 90/Die Grünen diese Koalition bilden könnten:

● Koaltionsregierung [*Coalition with medium rating*]: 100%

Wie wahrscheinlich ist es, dass Sie in dieser Situation Bündnis 90/Die Grünen bei der Bundestagswahl 2021 **wählen** würden?

[0 - Sehr unwahrscheinlich, … , 10 - Sehr wahrscheinlich]

Screen 6:

Stellen Sie sich nun vor, Bündnis 90/Die Grünen **würden nicht klar sagen, in welche Koalitionsregierung sie nach der Wahl eintreten möchten**. Daraus würden sich folgende Wahrscheinlichkeiten ergeben, dass Bündnis 90/Die Grünen unterschiedliche Koalitionsregierungen bilden könnten:

● Koaltionsregierung [*Coalition with high rating*]: [*Probability 1*]%
● Koaltionsregierung [*Coalition with medium rating*]: [*Probability 2*]%
● Koaltionsregierung [*Coalition with low rating*]: [*Probability 3*]%

Wie wahrscheinlich ist es, dass Sie in dieser Situation Bündnis 90/Die Grünen bei der Bundestagswahl 2021 **wählen** würden?

[0 - Sehr unwahrscheinlich, … , 10 - Sehr wahrscheinlich]

Screen 7:

Stellen Sie sich nun eine andere Situation vor, in der Bündnis 90/Die Grünen **ebenfalls nicht klar sagen, in welche Koalition sie nach der Wahl eintreten möchten**. Daraus würden sich folgende Wahrscheinlichkeiten ergeben, dass Bündnis 90/Die Grünen unterschiedliche Koalitionsregierungen bilden könnten:

● Koaltionsregierung [*Coalition with high rating*]: [*Probability 4*]%
● Koaltionsregierung [*Coalition with medium rating*]: [*Probability 5*]%
● Koaltionsregierung [*Coalition with low rating*]: [*Probability 6*]%

Wie wahrscheinlich ist es, dass Sie in dieser Situation Bündnis 90/Die Grünen bei der Bundestagswahl 2021 **wählen** würden?

[0 - Sehr unwahrscheinlich, … , 10 - Sehr wahrscheinlich]

Analysis Plan

14. Statistical models

We use different linear regression model specifications to evaluate the hypothesis. The dependent variable in all cases is the propensity to vote for the CDU/CSU or the Greens. We reshape the data-set to long-format such that we observe three vignette propensities to vote for the parties under each scenario and respondent.

To evaluate Hypothesis 1 we estimate a regression model with the uncertain and very uncertain scenario as a dummy independent variable. The baseline is a certain scenario. For all models, we cluster standard errors on the respondent level. We would expect that the propensity to support the parties is lower in the uncertain and very uncertain scenario compared to the certain scenario. The very uncertain scenario should further result in lower propensity to vote for the parties compared to the uncertain scenario. We present two additional model results. First, we present a respondent fixed-effects model. Second, we report on models that include dummy variables for the lowest, medium and highest coalition presented to respondents. In total there are three models for each of the two parties.

We further explore the conditional effect of the treatments using interaction effects. To evaluate hypotheses 2 and 3 we present results from linear regression models in which we interact the effect of the uncertain and very uncertain scenario with the risk preference of the respondents. We split the risk preference scale into three equally sized parts and include the dummy variables in our regression model. We again calculate clustered standard errors but do not include fixed effects. For hypothesis 2 we expect a positive effect of an uncertain and very uncertain scenario among the respondents in the lowest risk preference group. For hypothesis 3 we expect a negative effect of an uncertain and very uncertain scenario among the respondents in the lowest risk preference group.

Hypothesis 4 calls for an interaction between the scenarios and the baseline propensity to vote (asked before the vignettes). We again split the baseline propensity to vote into three equally sized parts and include the dummy variables in the model specification. According to the hypothesis, we would expect no effect for the group with the lowest propensity to vote for the parties but positive effects for the middle and high propensity to vote group.

15.   Transformations

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16.   Inference criteria

We will rely on classical frequentist statistical inference and the conventional $p<.05$ cut off for statistical significance. All tests will be two-tailed.

17.   Data exclusion

We will listwise delete respondent observations who did not answer questions about the propensities to vote or the risk preferences.

18. Missing data

We will rely on model specific listwise deletion of observations with missing variable values.

19. Exploratory analysis

We will conduct explanatory analysis for heterogeneous effects, based on political knowledge, political left-right self-positioning, and the different coalitions constellations presented to respondents. For this we interact the scenarios with the variables. As we do not have clear expectations we pre-register these analyses steps as exploratory.

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