Strategic Abstention in Proportional Representation Systems (Evidence from Multiple Countries)

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Abstract

This paper proposes a framework to assess whether there is strategic abstention in proportional representation (PR) systems. Strategic abstention occurs when instrumental voters who believe the race is extremely close choose to abstain. Drawing from Blais (2006), the assumption is that the race between coalitions (and not between parties) is what ultimately matters. The main predictions are two: (i) voters who expect the race to be neck-and-neck are more likely to abstain when they cannot express a strong preference for any of the two leading coalitions; and (ii) preferences over coalitions no longer explains turnout among voters who believe one of the coalitions is clearly ahead. In order to test them, I use pre-electoral survey data from five different elections in three different countries (Austria, Germany, and Israel). Results strongly support both predictions. Finally, this paper also shows that uncertainty regarding which coalitions may be formed decreases turnout. Taken together, these results suggest that, in PR systems, coalition expectations play a key role in the decision to vote or not.

1 Introduction

Understanding turnout decisions has proven one of the most challenging tasks for political scientists and economists. The literature has shown that there are situations in which, even if instrumental voters believe they can be decisive, they prefer to abstain. Strategic abstention in plurality elections has been predicted in theory (Feddersen and Pesendorfer, 1996) and tested in the lab (Battaglini et al., 2008, 2010; Morton and Tyran, 2015). This work has been recently extended to proportional representation (PR) systems in theory (Herrera et al., 2016a) and also in the lab (Herrera et al., 2016b) .

This paper proposes a framework to assess whether strategic abstention also occurs in actual elections under a PR system. That is, it seeks to empirically find out whether there are situations in which voters who (i) are concerned about policy outcomes; and (ii) believe their vote is likely to have an impact on government formation, prefer to abstain rather than casting a vote. To the best of my knowledge, this is the first paper that attempts to do so.

Strategic turnout in PR systems should not be unexpected: the recent literature has extensively shown that a non-negligible set of voters try to strategically affect policy outcomes with their vote under PR systems (Bargsted and Kedar (2009), Duch et al. (2010), Blais et al. (2006), Bowler et al. (2010), Hobolt and Karp (2010), Kedar (2009), Meffert and Gschwend (2010), Riambau (2015)). If the decision at the voting booth is strategic, there is little reason to believe that the decision on turnout is not (Sobbrio and Navarra, 2010).

The framework presented here lays out why individuals who only care about policy outcomes may have an incentive to abstain even when they feel their vote could be decisive. Defining a vote as *decisive* in PR systems is a complex task, since, unlike in plurality elections, there are no definite, clear pivotal events. Drawing from Blais (2006), for the purposes of this paper, I define as decisive those voters who can alter the chances of the different coalitions —i.e. they can alter expected policy outcomes. This is not necessarily an extremely rare event: as noted in Baron and Diermeier (2001), "[for the voter,] each distribution of seat shares corresponds to a probability distribution over government policies" (p.936). Hence, voters may believe they are decisive as long as they believe there is a positive probability that their vote determines which party wins the *last* seat. Since policies are ultimately decided by the governing coalitions, I call them *coalition-pivotal* voters.

To understand why policy motivated voters who believe they are coalition-pivotal may choose to abstain, consider an individual who is convinced there are only two possible outcomes after the elections: either coalition a will be formed, or coalition b.[1] As an instrumental voter who can affect their likelihood of being formed, this agent should cast a vote in order to affect policy outcomes. However, there are two scenarios under which she may prefer to not cast a vote. First, if she is uncertain about the quality of such coalitions, and believes other voters may have better information. Second, if she is truly indifferent between both coalitions, and the cost of voting is larger then the expected utility of casting a vote. Note that in the first case, she will prefer to abstain and defer to potentially better informed voters even when voting costs are non-existent.[2]

This framework yields a clear testable prediction regarding voters who believe they may be coalition-pivotal between two (or more) coalitions: the more they prefer one over the other, the more likely they will be to vote. In other words, the more similar their level of support for both coalitions, the more likely

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[1]Strictly speaking, coalitions can be single-party governments. I use the term 'coalition' throughout because multiple-party coalitions are the norm in the three countries I have data for —Austria, Israel and Germany.

[2]This framework focuses on policy motivated voters since, by definition, they are the only ones who may respond to electoral expectations. It does not deny the existence of "sincere" voters, and, importantly, I show that it can be generalized to including them.

they will be to abstain even if they can cast a decisive vote.

In order to check whether this prediction is empirically validated, I use pre-electoral survey data from five different elections in PR systems (Austria, Germany, and Israel) between 2006 and 2013. To my knowledge, these are the only surveys that include *both* information on respondents' subjective assessment of the probabilities of different coalitions, and their preferences towards such coalitions, which are critical for the analysis.

As noted above, coalition-pivotal voters are those who can alter the likelihood of the different coalitions with their vote. For empirical purposes, they are defined as those for whom the two leading coalitions are equally likely. This follows the literature on large Poisson games (Myerson, 2002; Castanheira, 2003), which notes that, in large elections, pivotal probabilities are orders of magnitude larger when the race is expected to be close than when there is a clear candidate ahead. That is, even if *all* pivotal probabilities are remarkably small, voters are more likely to behave *as if* pivotal in close races than in likely winner contests. As Blais (2006) notes, what really matters in PR systems "may be the closeness of the race between the two major coalitions [and not between the two major parties]" (p.120).

Hence, the empirical analysis focuses on those voters who foresee a close race between two coalitions (so close they give them equal chances). I use their observed preferences to check whether their likelihood to turn out increases the more they prefer one of these leading coalitions over the other one. I first test this country by country: results support the prediction made above. This is the case in three of the five elections. When the data for all countries is pooled as in Sobbrio and Navarra (2010), results are strong and unambiguous: conditional on being coalition-pivotal, indifference between the leading coalitions increases likelihood to abstain. These results are robust to a series of different specifications described in the text. The size of the effect is not negligible: the difference in predicted turnout between coalition-pivotal voters who are indifferent between both coalitions and those who have a strong preference for one of them is similar to the difference in predicted turnout between low political knowledge and high political knowledge voters.

Indifference between alternative options has been shown to increase turnout (Adams et al. (2006), Hortala-Vallve and Esteve-Volart (2011)). Importantly, this paper also shows that abstention is not a story of preference intensity alone. Results just described do not replicate when using a sample of voters who believe one of the coalitions is clearly more likely than all other ones. That is, when the race is not expected to be close, preferences over coalitions cease to matter. This result is critical, since it supports the argument that indifference among coalitions increases abstention only when these coalitions are expected to be neck-and-neck.

This empirical exercise is extended to assess the impact of imperfect information on turnout of coalition-pivotal voters. Previous research has shown that turnout increases with individual level of information in actual elections (Degan and Merlo, 2011; Sobbrio and Navarra, 2010) and also in the lab (Herrera et al., 2016b). This paper contributes to our understanding of turnout by focusing specifically on the impact of imperfect information on the coalitions' expected policies and their chances of being formed. I first check whether uncertainty about coalition policies affects turnout. Results show no effects. This suggests that when coalition-pivotal voters abstain, they are not doing so with the intention to delegate to better informed voters. Second, I check whether uncertainty about coalition chances affects turnout. Results show that the less certain voters are about the outcome of the elections, the more likely they are to abstain. This result holds controlling for education, political knowledge and political interest. This is consistent with the findings in Tillman (2015) and Gschwend et al. (2017), who show that pre-electoral coalitions have a positive effect on turnout. The implication is straightforward: at the margin, ability to

pin down the relevant set of coalitions and its probability distribution increases turnout.

Taken together, results in this paper highlight the importance of the interaction between electoral expectations and policy preferences to explain turnout. Overall, they reveal that a non-negligible set of voters seem to condition their decision of turning out on the expected policy impact they expect their vote to have. This suggests that, in order to improve of understanding of turnout in PR systems, more attention should be paid to subjective coalition expectations, their formation, and their impact on voters' strategies.

2 Theoretical Framework

The literature on coalitional voting has grown substantially in the past few years. Many studies have shown that coalition considerations critically drive the behavior of a non-negligible subset of voters in PR systems (Bargsted and Kedar (2009), Duch et al. (2010), Blais et al. (2006), Bowler et al. (2010), Hobolt and Karp (2010), Kedar (2009), Meffert and Gschwend (2010), Riambau (2015)). Such voters have indistinctly been denoted as *policy* or *coalition* voters. Once the policy motivation of their vote has been established, the next step is to check whether coalition-oriented voters who cannot express a strict preference relation among the coalitions they regard as most probable are less likely to turnout altogether. This section describes the theoretical framework I use to that avail.

2.1 *Decisive* votes in PR elections

Instrumental voters base their decisions on expected policy outcomes. Since, more often than not, policies in countries with PR systems are determined by government coalitions, instrumental voters should base their decisions on the event that their vote is decisive in determining the coalition to be formed (Indridason, 2011). Defining a vote as *decisive* in PR systems is, however, not straightforward, since, unlike in plurality elections, there are no definite, clear pivotal events.

An early prediction on coalition formation first proposed by von Neumann and Morgenstern (1953) (and later applied and re-visited by Gamson (1961), Riker (1962), Baron and Ferejohn (1989)) is that minimal winning coalitions should form — that is, coalitions should incorporate the minimum number of parties such that a majority of seats in the chamber is attained. In such a case, a vote would be decisive if it were to secure the seat that guaranteed majority in parliament for a particular set of parties. However, the voter would only be certain about the decisiveness of her vote if the relevant set of parties had reached and made public a pre-electoral agreement to form a coalition. Generally, though, coalition agreements prior to the elections are the exception: more than half of the elections do not have any pre-electoral coalition, whereas only a quarter of coalition governments are a result of a pre-electoral coalition (Golder, 2006). Furthermore, evidence is not overwhelmingly supportive of minimal winning coalitions (Martin and Stevenson (2001), Volden and Carrubba (2004)).[3]

Voters may nonetheless be decisive even when their vote is not necessary to secure a minimal winning coalition. That is, for example, the case when a *formateur* is selected according to a known rule which explicitly depends on election results (as in the literature started by Baron and Ferejohn (1989)). Many have modeled such rule as stochastic, where the probability distribution is derived from vote shares (Baron and Diermeier (2001), Cho (2014)). Such procedure is empirically well supported (Diermeier and Merlo

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[3]Martin and Stevenson (2001) observe that "minimal-winning coalitions are morel likely to form than the other two types of coalitions [minority or surplus majority]" (p.41), whereas Volden and Carrubba (2004) state that "while the logic of minimal winning coalitions has remained robust, the empirical record has not supported its point prediction" (p.522).

(2004)). Furthermore, vote shares matter in the choice of coalition partners and posterior distribution of cabinets (Austen-Smith and Banks (1988), Ansolabehere et al. (2005), Baron and Diermeier (2001)).

Most theories predict that even if party elites have a large say in the post-election coalition bargaining process, voters can indeed shape coalition formation with their vote in the elections: in Baron and Diermeier (2001)'s words, to the eyes of the voter, "each distribution of seat shares corresponds to a probability distribution over government policies" (p.936). Therefore, each vote is *quasi*-pivotal in the sense that it modifies this probability distribution.

In sum, there are multiple events that can be defined as decisive in a PR election. Broadly speaking, they can be distinguished in two types, which may be called *within-coalition* and *between-coalition* pivotal events. Within-coaliton pivotability refers to the situation in which an agent is sure that a particular coalition will be formed, but is unsure about the particular power relationship that will take place within that coalition. Hence, in order to increase the bargaining power of her preferred party within that coalition, the instrumental voter may cast a vote for that party.[4] Between-coalition pivotal events are those in which the voter aims to directly affect the likelihood of a particular *formateur* or coalition. Given that the available survey data only allows us to infer subjective between-coalition probabilities, this paper focuses on this type only. Hence, in the framework presented next, coalition policies remain fixed. That is, it is assumed that voters can affect the likelihood of coalitions forming, but cannot affect the bargaining power of each of the parties forming it (and hence cannot modify its expected policies).

2.2   The voter's decision

The literature has shown that voters consider many dimensions when they cast a vote. The expressive ("sincere") utility of voting for a given party, the policy implications, or the potential parliamentary legislative action of parties are the most commonly cited ones. The framework I propose here assumes for simplicity of exposition that voters care only about the policy implications of their vote —i.e., all voters are strategic. Section 2 in the Supplementary Materials develops and generalizes the framework presented here. In particular, it shows how all predictions can be generalized to a model in which voters are partially sincere and partially strategic.

Let us focus on the decision of a given individual i in a scenario with three possible coalitions: a, b, and c. If i abstains, the probabilities of these coalitions forming are p_a, p_b, and p_c. Suppose further that a given party j may enter coalition a, surely not enter coalition b, and may or may not enter c (scenarios where a party enters all or none of the coalitions are not relevant). Suppose for simplicity that if i decides to vote for j, then she alters the probabilities of a and b forming, whereas the probabilities of c remain unchanged (this is relaxed in the Supplementary Materials). That is, $p_a^j > p_a$, $p_b^j < p_b$, and $p_c^j = p_c$, where p_g^j is the probability of a given coalition g forming given that the agent votes for party j.

Let t be the costs of voting (it implicitly includes the benefits of voting, such as a sense of civic duty, so t may be infinitesimally small or even negative for some voters). Finally, let U_a be the utility i expects to get from coalition a's policies if the coalition is formed (without loss of generality, assume $U_a > U_b$). Then, i will turn out and vote only if there exists some party j such that

$$p_a^j U_a + p_b^j U_b + p_c^j U_c - t > p_a U_a + p_b U_b + p_c U_c \tag{1}$$

That is, if the expected utility of casting a vote for j minus the voting costs (LHS) is larger than

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[4]Game theoretical approaches have suggested that smaller parties should get a disproportionate share of the pie, but as most of the empirical literature has pointed out, Gamson's Law prevails i.e. the distribution of portfolios most resembles the distribution of seat shares within the coalition. See Ansolabehere et al. (2005) for further discussion.

the expected utility of abstaining (RHS). Re-arranging and defining $\Delta p_g^j = p_g^j - p_g$, the condition can be re-written as

$$\Delta p_a^j U_a + \Delta p_b^j U_b + \Delta p_c^j U_c > t \qquad (2)$$

Given that i's vote for j does not affect the probabilities of c forming, we have that $\Delta p_c^j = 0$. Hence, since i's vote for j only affects the likelihood of a and b forming, it must be the case that $\Delta p_a^j = -\Delta p_b^j$. Therefore,

$$\Delta p_a^j \left(U_a - U_b \right) > t \qquad (3)$$

That is, i will turn out and vote only if there exists some party j such that condition (3) holds: i.e., the expected increase in the benefits from government policies resulting from voting are larger than the cost of voting.

From (3) we can make two testable predictions regarding voters who are coalition-pivotal, i.e., for whom $\Delta p_a^j > 0$. First, the more intense the preference for coalition a (as opposed to b), the more likely i will be to cast a vote. In turn, when a voter is indifferent between both coalitions she will be more likely to abstain. The second one refers to coalition-pivotal probabilities. Conditional on preferring a to b, i will be more likely to vote the larger the marginal increase in the likelihood of a forming resulting from her vote (i.e., the larger Δp_a^j). That is, the less likely she believes her vote to be coalition-pivotal, the less likely she will be to vote even if she has a strong preference between the coalitions. Summarizing, the testable predictions are as follows:

Prediction 1 [intensity of preferences]: When a voter can affect the race between two coalitions that are leading neck-and-neck, the more this voter prefers one coalition over the other, the more likely she will be to vote.

Prediction 2 [vote decisiveness]: If a voter believes her vote is unlikely to be decisive between two coalitions (i.e., one coalition is clearly ahead in the race, so that $\Delta p_a^j \to 0$), she will be unlikely to vote even if she has a very strong preference for one of the two.

Note that a voter may abstain even when voting costs are non-existent. This will happen when she is completely indifferent between the two coalitions she can cast a decisive vote for. Indifference can be given by preferences (when voters are fully informed and genuinely do not prefer one over the other) or —more in line with Feddersen and Pesendorfer (1996)— because of an informational component: voters do not have enough information about future coalition policies and are therefore unable to distinguish or rank them. Finally, it is important to emphasize i need not be indifferent between all coalitions for the strategic abstention to be present: it suffices that she is indifferent between the most likely coalitions. This is why relative pivotal magnitudes matter: as Section 2 in the Supplementary Materials shows, events that are orders of magnitude smaller *de facto* do not count towards the decision of the voter.

3   Data and variables of interest

This section describes the data and discusses the construction of the main variables of interest. I use publicly available pre-electoral survey data from five legislative elections: Austria (2006 and 2013), Germany (2009 and 2013) and Israel (2006). To my knowledge, they are the only ones that contain explicit information on both coalition preferences and coalition expectations, which are key to this study. Section 1 in the Supplementary Materials provides details and descriptive statistics for all variables used.

3.1 Turnout

The dependent variable of interest in this study is turnout probability. All surveys ask respondents how likely they are to cast a vote. I normalize all responses to be between 0 (not likely at all/very unlikely) and 1 (very likely/for sure). One potential limitation of using survey data is that the average turnout probability in the sample may differ from the actual turnout rate in the elections. Table 1 summarizes such differences for all five elections. This is particularly relevant for Israel and Austria 2006, since the average turnout probability in the survey is around 90%, which gives very little variability overall. The main potential problem arising from having a non-representative sample is the possibility of obtaining biased regression coefficients. However, as Sobbrio and Navarra (2010) point out, vote validation studies also suggest that the presence of such a discrepancy has no significant effect on the empirical results. See Matsusaka and Palda (1999) for a discussion of this issue.

3.2 Coalition pivotal probabilities and preferences

As Blais (2006) notes, decisiveness in a PR election is likely to be determined by the closeness of the race between two major coalitions, and not that between the major parties. Perceived coalition-pivotal probabilities are not directly observed in any of the surveys. However, all surveys collect information on the perceived likelihood of each coalition, which can be used to construct a measure of subjective coalition-pivotal probabilities. Data on coalition expectations comes from a question that generally reads 'What is the likelihood that a coalition between j, k and h is to be formed after the elections?' Values range from 1 (very unlikely to be formed) to 4 (very likely to be formed) for both surveys in Austria and Germany 2009, from 0 (very unlikely) to 10 (very likely) in Germany 2013, and from 0 to 100 (no labels) for Israel 2006. The approach I use here follows that of the voting literature on large Poisson games for 'first past the post' and runoff elections, which relies on the relative magnitude of the pivotal probabilities of different events, and not the pivotal probabilities *per se* (Myerson (2000), Myerson (2002), Bouton and Castanheira (2012), Castanheira (2003)).

Myerson (2002) argues that "to characterize rational equilibria with instrumental voters, we need a formal procedure to identify which pairs of candidates are more likely to be in a close race where one vote could determine the winner (...). So if we can show that a close race between one pair of distinguishable candidates has a magnitude that is strictly greater than the magnitude of a close race between another pair of candidates, then the latter race is not serious" (p.228). Castanheira (2003)) synthesizes the argument: if the voter wants her vote to be instrumental, "she must only consider the states of the world where pivotability is most likely" (p.826).[5]

Following this approach, I need to infer the relative magnitude of different pivotal events from observable information on coalition expectations. What is relevant is not the cardinality of the chances, but the fact that coalitions can be ranked in terms of their perceived likelihood. Given that for any voter we observe all perceived coalition probabilities, we can infer that, *if voters are to believe they are pivotal, then they are most likely to believe they are pivotal between those coalitions which they deem as 'most likely'.*

Consider the following example: suppose a given individual i states that coalitions a and b are both 'very likely', and coalitions c and d are 'fairly unlikely'. She is exceedingly more likely to be decisive between coalitions a and b than between any other pair of coalitions, since (paraphrasing Myerson (2002)) a and b are the pair of candidates that are more likely to be in a close race.

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[5]See also Bouton (2013), Goertz and Maniquet (2011) or Núñez (2010).

Hence, drawing from Blais (2006), I construct a measure of 'Chances of the most likely coalition – Chances of the second most likely coalition'. For empirical purposes, I define as 'coalition-pivotal' those agents for whom this measure takes value zero, since these are the agents for whom a close race between one pair of distinguishable coalitions has a magnitude that is strictly greater than the magnitude of a close race between any other pair of coalitions.[6] Importantly, the predictions of large Poisson games are confirmed empirically in the lab (see Figure 1): the closer the race between two candidates, the more pivotal voters believe they are.[7] Furthermore, it has been shown that voters in PR systems make quite accurate predictions about coalition formation (Armstrong and Duch, 2010; Riambau, 2016).

Respondents' preferences for the different coalitions are also critical for this study. The number of coalitions included in the surveys ranges from four to seven. Information on coalition support takes values from 0 (none) to 10 (maximum) for all elections (except for Israel, where the range is $[1, 10]$). I use these questions to construct the following variable: 'Support for most likely coalition – Support for second most likely coalition' (the equivalent to $U_a - U_b$ in expression (4)). For subjects for whom the two most likely coalitions are in fact equally likely, I construct the variable so that it always takes a nonnegative value. If three or more coalitions are expected to tie on top, I use the two most preferred ones.

In order to control for intensity of preferences, regressions include '[Level of] support for most preferred coalition' $\in [0, 10]$ ($\in [1, 10]$ in Israel). By construction, all results in this study exclude respondents who can assess *at most* the chances of one coalition or assess own support for *at most* one coalition.

3.3 Party preferences and expectations

Intensity of party preferences are also a key determinant of turnout. In order to control for those, I construct 'Sympathy for most preferred party' $\in [0, 10]$ ($\in [1, 10]$ in Israel). Similarly, in order to control for support to the political system overall, I also include 'Average sympathy for all parties'.

Results in this paper implicitly assume that individuals in all samples have the same mapping between political preferences and numbers on the eleven-point sympathy scores. However, results do not rely on the cardinality of sympathy scores, but on whether individuals can strictly rank different options. This should substantially mitigate such a potential source of measurement errors. Furthermore, inclusion of individual mean sympathy and maximum sympathy scores should further undermine the problem.

Finally, I include perceived probabilities of one's favorite's party entering parliament as a control, since this may affect turnout, too. In particular, 'chances of favorite party entering government' are included. If two or more parties are the most preferred, chances of the most likely are taken into account. The values range from 1 (surely not/very unlikely) to 4 (surely/very likely).[8] Section 2.3 in the Supplementary Materials provides more details.

3.4 Sociodemographic characteristics and political attitudes

Finally, I also include in the analysis other variables that are traditionally explanatory of turnout. These are age, gender, education level, political knowledge, political interest, party identification and strength of

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[6]The set of voters for whom *all* coalitions are equally likely is negligible in all surveys.

[7]Data from three identical experiments carried out in Montréal, Paris and Brussels between 2009 and 2010. These experiments were designed and carried out by Simon Labbé St-Vincent, and were the basis for St-Vincent (2013). The figure and analysis presented here are original. The advantage of the data collected by Labbé St-Vincent is that before each round of voting, subjects were asked *both* about chances of each of the candidates, and their own chances of casting a decisive vote, which makes this data set unique in that respect. Labbé St-Vincent generously shared the data with me, so I can hereby test whether closeness of the race and own perceived pivotal probabilities are positively correlated.

[8]1 to 5 for Germany 2013. The survey for Israel 2006 asks about 'expected seats to be won' for small parties only if the respondent states that (s)he will vote for such party. Hence, this variable cannot be used for that case. Similarly, the survey for Austria 2013 does not include any information on that respect.

party identification. Depending on the data availability for each election, other controls used are number of people in the household, employment status, religion, place of birth, language spoken at home, marital status, size of town of residence or opinion on democracy. Section 1 in the Supplementary Materials gives more details.

4   Empirical strategy

The main goal is to assess whether voters who believe two or more coalitions are leading the race are more likely to turn out the more they prefer one of these leading coalitions over the other. To this avail, this paper focuses on the subset of voters for whom there are at least two leading coalitions that are regarded as equally likely —i.e., coalition-pivotal as defined above in section 2. The following specification is used:

$$Pr.(vote_i) = \alpha + X_i\beta + POL_i\gamma + g\Big(U_{ia} - U_{ib}\Big) + \varepsilon_i \quad \Big| \; p_{ia} = p_{ib} \geq p_{ic} \text{ for some } a, b \text{ and } \forall \; c \in \mathcal{C} \quad (4)$$

where p_{ig} is i's subjective probability that coalition g will form, $\mathcal{C}$ is the set of all possible coalitions, U_{ig} is i's support for coalition g, X_i is a vector of sociodemographic controls, POL_i a vector of political attitudes and preferences, and $g(.)$ is a function of unknown form. If three or more coalitions are deemed to be most likely, the two most preferred are used.

The function $g(.)$ is the main object of interest. I use a partially linear model to give more flexibility to the estimation — it keeps the flexibility of nonparametric models while maintaining the explanatory power of parametric models (Kai et al., 2011). In particular, to estimate $g(.)$ I use Robinson (1988) double residual semiparametric regression estimator.

POL_i and X_i include all variables described above.[9] Both vectors of controls aim at capturing all possible incentives that voters may have to turn out over and above coalition-pivotal considerations.

4.1   Pooled sample

All results are presented individually by country and, as in Sobbrio and Navarra (2010), also using a pooled sample. Since different surveys have different units of measurement, I normalize all common control variables so that the values are directly comparable. Hence, political knowledge, education or political interest are all re-scaled to take values between 0 and 1. Similarly strength of party identification $\in [0, 5]$, chances of entering parliament $\in [0, 100]$, sympathy party/coalition $\in [0, 10]$, and education $\in [1, 5]$ are also re-scaled.

5   Results

Before showing the shape of $g(.)$ for the different countries, let me emphasize that the effects of socioeconomic characteristics and political attitudes on turnout are as expected: Table 3 and Table 4 use a pooled sample of all five elections and show that age, political interest, political knowledge, level of support for one's favorite party, strength of party identification, and education increase turnout significantly (results —not shown but available upon request— also hold individually for all countries).

Unless otherwise stated, results described below use a sample of only voters who believe there are two (or more) leading coalitions with equal chances of being formed (i.e., coalition-pivotal voters). Table

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[9]There is no data for Israel 2006 on political interest. This can be proxied with past vote in the previous 2001 prime ministerial and 2003 legislative elections.

2 shows some unconditional results. We can clearly see that a strong policy preference indeed matters: on average, those who prefer a coalition significantly more than the other one are ten percentage points more likely to turn out than those who are indifferent between the two.

Figure 2 shows results from the full model as specified in (4). In three of the five elections, there is a clear effect of preferences over coalitions on turnout: the more clearly agents can distinguish their support for the most likely coalitions, the more likely they are to vote. There seems to be no effect for both Austria 2006 and Israel 2006. This is hardly surprising, given the fact that in both cases self-reported turnout in the survey averages is around 90%, which leaves little room for identification.

When all elections are pooled, the effect is unambiguous: turnout is around five percentage points larger among those who have a clear preference between both coalitions. Figure 2 in the Supplementary Materials shows results are robust to using a different bandwidth for estimation. This is strong evidence in favor of Prediction 1 ("When two coalitions are leading the race, the more a voter prefers one over the other, the more likely she will be to vote.").

Figure 3 in the Supplementary Materials provides a second robustness check. The sample is expanded to include those who believed only one coalition was leading the race, but perceived the second most likely one as very close — i.e., only lagging a few percentage points behind. All results hold. In fact, Prediction 1 seems to hold more strongly for Israel 2006 and Germany 2013. This is not surprising given that these are the two elections for which the sample of respondents who believe the coalition race was neck-and-neck is smaller. Figure 4 in the Supplementary Materials shows that, when using the pooled sample, results are robust to alternative specifications of the set of coalition-pivotal voters.

Finally, Table 3 shows that results also hold when difference in support for the leading coalitions $\left(U_{ia} - U_{ib}\right)$ enters linearly in the regression. Results reveal that, compared to respondents who are indifferent between the two leading coalitions, turnout is predicted to be 5% higher among those who strongly prefer one of the two (maximum difference of support, i.e., ten points). This effect compares to increasing political knowledge from none to full (7.8% predicted increase in turnout), or increasing the evaluation of one's favorite party in two points in a scale of ten (6.8% predicted increase in turnout).

However robust results seem to be, it could be argued that what really matters is a strict policy preference relation *per se*, regardless of coalition pivotal probabilities. I check whether this is the case using the subsample of voters for whom one coalition was clearly ahead in the race. That is, if coalition probabilities in the survey are from 1 (very unlikely) to 4 (very likely), I restrict the analysis to voters for whom the difference between the top two most likely is at least 2 points in that scale (or if the scale is from 0 (very unlikely) to 100 (very likely), at least 40).[10] If this is a story of preference intensity alone, we should find that $g(.)$ has the same shape as in Figure 2. If, on the other hand, the effect is conditional on perceived coalition-pivotal probabilities, then we should find that $g(.)$ has a flat shape —as Prediction 2 suggests. Figure 3 shows the results.

The results for the pooled sample are shown in Figure 3f. This gives unambiguous support to Prediction 2: i.e., intensity of preferences for coalitions alone does not explain turnout. When looking at individual cases, three out of five also support Prediction 2: the shape of $g(.)$ is indeed flat. The two individual exceptions to this are Germany 2009 and Israel 2006. The slope is positive in Germany 2009. However, the effect of differential support on voting for non coalition-pivotal voters (Figure 3c) is smaller and less precise than for coalition-pivotal voters (Figure 2c). Hence, strictly speaking, Germany 2009 cannot be used to discard Prediction 2. On the contrary, Israel 2006 clearly rejects Predictions 1 and 2

[10]Using this metric there are only 39 observations for Austria 2006. Hence, for that case, the sample of voters includes all voters for whom distance was at least one point in a scale of 1 to 4, which increases the sample to 452.

(Figures 2e and 3e). Nonetheless, its sample size ($N = 69$) and, therefore, precision of the estimates are relatively small compared to all other cases.

6   The role of uncertainty

This paper has so far argued that, conditional on perceiving two or more coalitions as the two most likely, having no strict preference relation between them decreases likelihood of turnout. One possible interpretation is that agents consider they do not have enough information to distinguish between both coalitions, and therefore strategically delegate to other voters. Another interpretation is that such agents may indeed be perfectly informed about them, and are simply genuinely indifferent between both.

The goal of this section is to explore the effects of imperfect information on turnout. I do not assess information levels in general as in Degan and Merlo (2011) or Sobbrio and Navarra (2010), but specifically focus on uncertainty with respect to coalition policies. To do so, I compare the behavior of those who express uncertainty about policy outcomes versus those who are confident they can determine the policies each potential coalition would carry out. Second, I check for the effect of uncertainty regarding coalition chances: I compare respondents who are uncertain about the joint probability distribution of the different coalitions versus respondents who can determine with precision the likelihood of all coalitions. Finally, I restrict the focus to those agents who are non-partisan and are relatively uninformed — in line with Sobbrio and Navarra (2010). All details of the latter can be found in Section 4 of the Supplementary Materials.

6.1   Uncertainty about policies

In order to construct a measure of policy uncertainty, I use questions regarding the location in the policy space of each coalition (Austria 2013 and Germany 2013), or, if those are not available, questions regarding the location in the Left-Right spectrum of each party (Israel 2006, Austria 2006, Germany 2009). I take advantage of the fact that the surveys have detailed information on "Don't know" and "No answer" (DK/NA) for most of the questions to construct a variable that measures the proportion of coalitions (or parties) that the respondent is unable to locate.[11] I call this variable $\%DK_i$.

DK/NA responses may nonetheless capture states beyond that of actual ignorance. Respondents may be resorting to *satisficing* (Krosnick, 1999), i.e., providing the easiest acceptable answer they believe is expected from them. They may also respond DK/NA out of boredom, tiredness, distaste for the coalition they are being asked about or actual inability to answer the question. Additionally, the proportion of DK/NA responses may in fact be capturing political disinterest. To correct for this, I restrict the sample to include only voters who can assess the chances of at least two coalitions, their own position in the Left-Right spectrum, and their support for at least two parties. Furthermore, all regressions include 'political interest' and other similar controls. All these should (at least partially) reduce concerns that DK/NA responses are only picking disinterest. Also, it should also be noted that DK/NA responses may be more likely among those respondents who share some behavioral traits (self-confident, outspoken, bold, extrovert, etc.). To the point that these personal characteristics are not correlated with strategic behavior, the results presented below should be unbiased.

I use the subsample of coalition-pivotal voters. To check whether policy uncertainty can predict turnout, I use the following specification:

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[11]Israel 2006 does not have information on "Don't know" or "No answer". I infer those from the missing answers in the survey.

$$Pr.(vote_i) = \alpha + X_i\beta + POL_i\gamma + \delta_1\text{INDIFFERENT} + \delta_2\%DK_i + \delta_3\text{INDIFFERENT} \times \%DK_i + \varepsilon_i \quad (5)$$

'Indifferent' is a dummy variable that takes value 1 if the respondent has the exact same level of support for the two leading coalitions, and 0 if she prefers one coalition to the other one. The coefficient of interest is the one on the interaction (δ_3): if coalition-pivotal voters who are indifferent between the two leading coalitions are more likely to abstain the less able they are to locate the different coalitions in the policy space, then we should find δ_3 to be negative. This would be evidence suggestive of a deferral to other voters perceived as better informed.

Column 1 in Table 4 shows the results. The coefficient of interest is indistinguishable from zero. When using an alternative specification of uncertainty (a dummy that takes value one if $\%DK_i$ is strictly greater than zero), the coefficient on the interaction remains indistinguishable from zero (column 2). This suggests that increased abstention among voters who perceive the race to be extremely close and are indifferent between the leading coalitions cannot be explained by a motivation to defer to other voters.

6.2 Uncertainty about results

I also check whether inability to assess the joint probability distribution of the different coalitions affects turnout. I construct a measure of uncertainty about results in a similar fashion as above. In this case, I use the proportion of coalitions for which respondents cannot give an estimated probability of being formed. To prevent potential confounding effects of political disinterest, I exclude from the sample all respondents who are unable to assess the chances of *all* coalitions. As above, I also restrict the sample to include voters who can assess their own position in the Left-Right spectrum. The regression specification is the same as in (5). The prediction is unclear in this case. There is no clear motive why coalition-pivotal voters who are indifferent among the leading coalitions should defer to other voters who they may regard as being better able to predict electoral outcomes.

Columns 3-4 in Table 4 show the results. These are unambiguous: uncertainty reduces turnout substantially (although results in column 4 fail to be significant). The effect is on all voters and not constrained to the set of 'indifferent' voters —the coefficient on the interaction is indistinguishable from zero. Importantly, the fact that uncertainty about coalition probabilities predicts turnout over and above controls on political attitudes suggests that the former is picking something beyond mere political disinterest and more intrinsic to coalition expectations.

7 Discussion

This paper has shown that there are two consistent patterns across elections in PR systems: first, coalition-pivotal voters turn out less when they cannot express a clear preference for one of the leading coalitions (which is consistent with Prediction 1). Second, this differential behavior fades out when voters do not believe their vote can be coalition-pivotal: in that case, voters who have a strong preference between the most likely coalition and the second one in the race are no more likely to turn out than voters who are indifferent between them (this is consistent with Prediction 2).

Results in this paper are robust to alternative specifications. When using a pooled sample, which significantly increases statistical power, the patterns found are clear and unambiguous. Only two individual-level regressions seem to consistently reject the predictions: Austria 2006 and Israel 2006. However, as

argued above, results for these two countries have to be taken with a grain of salt: the average reported likelihood to turn out is much larger than the actual turnout in the elections. This in turn gives little variability to the data, since unconditional turnout likelihood is very close to the upper bound.

All results taken together suggest the presence of strategic turnout (and strategic abstention). The size of this effect is not negligible. Those who have a strong preference between the leading coalitions are nearly five percentage points more likely to turn out than those who are indifferent. This is comparable to the effect of political knowledge on turnout.

Even though this is not the goal in this paper, back of the envelope computations can give us the upper bound of the proportion of strategic voters. In their strict sense, the predictions laid above imply that all instrumental voters who perceive the race to be neck-and-neck and do not have a preference between both coalitions should abstain. The fact that average turnout among coalition-pivotal voters who express no strict preference is around 85% (Figure 2f) suggests that these voters are in fact not instrumental (at least not in the way defined in this paper). In other words, the proportion of voters who respond to coalition-pivotal considerations is likely to be capped at around 15%. This is line with the previous literature on strategic voting in PR systems, which has shown that, conditional on turning out, strategic voting is existent but small (see Section 1 for all citations). See Section 2.2 in the Supplementary Materials for more details.

This paper also relates to the literature that has investigated the turnout effects of indifference towards (or alienation from) candidates in 'first past the post' systems (Hortala-Vallve and Esteve-Volart (2011), Adams et al. (2006)). The findings presented here suggest that this effect is likely to be weaker among voters who do not expect the race to be close.

The underlying reason why a sizeable proportion of coalition-pivotal prefer to abstain remains, however, unclear. Results in Section 6 suggest that those who abstain are not intending to defer to other voters: their abstention seems to be a result of a genuine indifference among the leading coalitions. This could be explained because, contrary to common value experimental elections in the lab, actual parliamentary elections are a tool to aggregate *preferences*, not information. Voters who are aware that they have little information on future coalition policies may believe that those voters who have better information do not share their political preferences. In that case, they would have no reason to delegate to them. Existing data, however, does not let us fully ascertain the true underlying motive behind their abstention. Future research should shed light on this question.

Finally, results show that voters who are less able to assess coalition probabilities seem less likely to turn out. This is in line with Downs' pessimistic conjecture: since assessing coalition probabilities is too complex a task, "most voters do not vote as though elections were government-selection mechanisms" (Downs, 1957: 300), but prefer to vote "sincerely" as a result. What results in this paper suggest is that, in fact, when unable to determine which coalition will be formed, some voters will choose to abstain rather than voting for their most preferred party. This argument is consistent with recent findings on the effect of pre-electoral coalitions on turnout. Tillman (2015) uses field data from 19 parliamentary democracies to show that the presence of a pre-electoral coalition increases turnout on average by more than 1.5 percentage points. Gschwend et al. (2017) find a similar effect using a survey experiment. Taken together, results in all three papers together suggest that reduction in ambiguity with respect to which coalitions may be formed (and hence with respect to the joint probability distribution of them being formed after the elections) has a positive effect on turnout.

8 Concluding Remarks

This paper has proposed a theoretical framework and empirical strategy for PR systems to assess whether voters who are most likely to believe they are decisive may have an incentive to abstain. Results suggest that those voters for whom the result is more uncertain (and hence should expect their vote to be more decisive) are more likely to abstain if they do not have a clear preference between the leading coalitions. Importantly, the effect of preference intensity on turnout hinges on expected certainty of the results: strongly preferring one of the two leading coalitions does not increase turnout when the race between these coalitions is not perceived to be close.

To the best of my knowledge, this has been the first attempt to explain turnout in PR systems by means of perceived coalition likelihoods. A few avenues of research lie ahead. Exactly identifying the process by which individual perceptions of coalition-pivotal probabilities are constructed and strategies determined is one of them. Blais (2000), St-Vincent (2013) and Duffy and Tavits (2008) have shown that voters tend to overestimate their chances of being pivotal. Results in this paper confirm that pivotal perceptions indeed seem to matter. Survey design and experimental work should help us understand how these beliefs are generated and incorporated into voters' strategies.

Another relevant question is to explore whether the patterns found here hold for distinct levels of polarization in elections. Existing evidence has pointed both towards mobilization and demobilization effects of polarization (see Kamm and Schram (2013) or Rogowski (2014) for a discussion). Results presented above suggest that polarization could affect turnout through perceptions of closeness of the elections.

Finally, future research should focus on understanding how uncertainty affects political behavior. For instance, by exploring how behavioral characteristics such as risk aversion or overconfidence affect turnout and voting strategies when the race is perceived to be close. St-Vincent (2013) is a nice first effort in that direction.

References

Adams, James, Jay Dow, and Samuel Merrill. "The political consequences of alienation-based and indifference-based voter abstention: Applications to presidential elections" *Political Behavior* 28, no. 1 (2006): 65-86.

Ansolabehere, Stephen, James M. Snyder Jr, Aaron B. Strauss, and Michael M. Ting. "Voting weights and formateur advantages in the formation of coalition governments." *American Journal of Political Science* 49, no. 3 (2005): 550-563.

Armstrong II, David A., and Raymond M. Duch. "Why can voters anticipate post-election coalition formation likelihoods?." *Electoral Studies* 29, no. 3 (2010): 308-315.

Austen-Smith, David, and Jeffrey Banks. "Elections, coalitions, and legislative outcomes." *American Political Science Review* 82, no. 2 (1988): 405-422.

Baron, David P., and John A. Ferejohn. "Bargaining in legislatures." *American Political Science Review* 83, no. 4 (1989): 1181-1206.

Baron, David P., and Daniel Diermeier. "Elections, governments, and parliaments in proportional representation systems." *The Quarterly Journal of Economics* 116, no. 3 (2001): 933-967.

Bargsted, Matias A., and Orit Kedar. "Coalitiontargeted Duvergerian voting: how expectations affect voter choice under proportional representation." *American Journal of Political Science* 53, no. 2 (2009): 307-323.

Battaglini, Marco, Rebecca B. Morton, and Thomas R. Palfrey. "Information aggregation and strategic abstention in large laboratory elections." *American Economic Review* 98, no. 2 (2008): 194-200.

Battaglini, Marco, Rebecca B. Morton, and Thomas R. Palfrey. "The swing voter's curse in the laboratory." *The Review of Economic Studies* 77, no. 1 (2010): 61-89.

Blais, André. *To vote or not to vote?: The merits and limits of rational choice theory.* University of Pittsburgh Pre, 2000.

Blais, André. "What affects voter turnout?." *Annual Review of Political Science* 9 (2006): 111-125.

Blais, André, John H. Aldrich, Indridi H. Indridason, and Renan Levine. "Do voters vote for government coalitions? Testing Downs' pessimistic conclusion." *Party Politics* 12, no. 6 (2006): 691-705.

Bouton, Laurent. "A theory of strategic voting in runoff elections." *American Economic Review* 103, no. 4 (2013): 1248-88.

Bouton, Laurent, and Micael Castanheira. "One person, many votes: Divided majority and information aggregation." Econometrica 80, no. 1 (2012): 43-87.

Bowler, Shaun, Jeffrey A. Karp, and Todd Donovan. "Strategic coalition voting: evidence from New Zealand." Electoral Studies 29, no. 3 (2010): 350-357.

Castanheira, Micael. "Victory margins and the paradox of voting." *European Journal of Political Economy* 19, no. 4 (2003): 817-841.

Cho, Seok-Ju. "Voting equilibria under proportional representation." *American Political Science Review* 108, no. 2 (2014): 281-296.

Degan, Arianna, and Antonio Merlo. "A structural model of turnout and voting in multiple elections." *Journal of the European Economic Association* 9, no. 2 (2011): 209-245.

Diermeier, Daniel, and Antonio Merlo. "An empirical investigation of coalitional bargaining procedures." *Journal of Public Economics* 88, no. 3-4 (2004): 783-797.

Duch, Raymond M., Jeff May, and David A. Armstrong. "Coalition-directed voting in multiparty democracies." *American Political Science Review* 104, no. 4 (2010): 698-719.

Duffy, John, and Margit Tavits. "Beliefs and voting decisions: A test of the pivotal voter model." *American Journal of Political Science* 52, no. 3 (2008): 603-618.

Feddersen, Timothy J., and Wolfgang Pesendorfer. "The swing voter's curse." *The American economic review* (1996): 408-424.

Gamson, William A. "A theory of coalition formation." *American sociological review* (1961): 373-382.

Goertz, Johanna MM, and Franois Maniquet. "On the informational efficiency of simple scoring rules." *Journal of Economic Theory* 146, no. 4 (2011): 1464.

Golder, Sona Nadenichek. "Pre-electoral coalition formation in parliamentary democracies." *British Journal of Political Science* 36, no. 2 (2006): 193-212.

Gschwend, Thomas, Michael F. Meffert, and Lukas F. Stoetzer. "Weighting parties and coalitions: how coalition signals influence voting behavior." The Journal of Politics 79, no. 2 (2017): 642-655.

Herrera, Helios, Aniol Llorente-Saguer, and Joseph McMurray. "The Marginal Voter's Curse." (2016). Available at: http://www.heliosherrera.com/marginalvoterscurse.pdf.

Herrera, Helios, Aniol Llorente-Saguer, and Joseph C. McMurray. "Information Aggregation and Turnout in Proportional Representation: A Laboratory Experiment." Working paper, 2016. Available at https://sites.google.com/site/aniollls/.

Hix, Simon, Rafael Hortala-Vallve, and Guillem Riambau-Armet. "The effects of district magnitude on voting behavior." *The Journal of Politics* 79, no. 1 (2017): 356-361.

Hortala-Vallve, Rafael, and Berta Esteve-Volart. "Voter turnout in a multidimensional policy space." Economics of Governance 12, no. 1 (2011): 25-49.

Hobolt, Sara B., and Jeffrey A. Karp. "Voters and coalition governments." *Electoral Studies* 29, no. 3 (2010): 299-307.

Indridason, Indridi H. "Proportional representation, majoritarian legislatures, and coalitional voting." *American Journal of Political Science* 55, no. 4 (2011): 955-971.

Kai, Bo, Runze Li, and Hui Zou. "New efficient estimation and variable selection methods for semiparametric varying-coefficient partially linear models." Annals of statistics 39, no. 1 (2011): 305.

Kamm, Aaron, and Arthur Schram. "A simultaneous analysis of turnout and voting under proportional representation: Theory and experiments." (2013). Available at http://www1.feb.uva.nl/creed/pdffiles/turnout_and_party_choice_WP.pdf.

Kedar, Orit. *Voting for policy, not parties: How voters compensate for power sharing.* Cambridge University Press, 2009.

Krosnick, Jon A. "Survey research." Annual review of psychology 50, no. 1 (1999): 537-567.

Martin, Lanny W., and Randolph T. Stevenson. "Government formation in parliamentary democracies." *American Journal of Political Science* (2001): 33-50.

Matsusaka, John G., and Filip Palda. "Voter turnout: How much can we explain?." *Public choice* 98, no. 3-4 (1999): 431-446.

Meffert, Michael F., and Thomas Gschwend. "Strategic coalition voting: Evidence from Austria." *Electoral Studies* 29, no. 3 (2010): 339-349.

Morton, Rebecca B., and Jean-Robert Tyran. "Let the experts decide? Asymmetric information, abstention, and coordination in standing committees." *Games and Economic Behavior* 72, no. 2 (2011): 485-509.

Myerson, Roger B. "Large poisson games." *Journal of Economic Theory* 94, no. 1 (2000): 7-45.

Myerson, Roger B. "Comparison of scoring rules in Poisson voting games." *Journal of Economic Theory* 103, no. 1 (2002): 219-251.

Núñez, Matías. "Condorcet consistency of approval voting: a counter example in large Poisson games." *Journal of Theoretical Politics* 22, no. 1 (2010): 64-84.

Riambau, Guillem. "Bandwagon or strategic voting in Israel? Note on Bargsted and Kedar 2009." *Electoral Studies* 37 (2015): 63-72.

Riambau, Guillem. "Do citizens vote for parties, policies or the expected winner in proportional representation systems? Evidence from four different countries using a multiple-type model." *Party Politics* (2016): 1354068816668669.

Riker, William H. *The theory of political coalitions.* Yale University Press, 1962.

Robinson, Peter M. "Root-N-consistent semiparametric regression." *Econometrica: Journal of the Econometric Society* (1988): 931-954.

Rogowski, Jon C. "Electoral choice, ideological conflict, and political participation." *American Journal of Political Science* 58, no. 2 (2014): 479-494.

Sobbrio, Francesco, and Pietro Navarra. "Electoral participation and communicative voting in Europe." European Journal of Political Economy 26, no. 2 (2010): 185-207.

St-Vincent, Simon Labbé. "An experimental test of the pivotal voter model under plurality and PR elections." *Electoral Studies* 32, no. 4 (2013): 795-806.

Tillman, Erik R. "Pre-electoral coalitions and voter turnout." *Party Politics* 21, no. 5 (2015): 726-737.

Volden, Craig, and Clifford J. Carrubba. "The formation of oversized coalitions in parliamentary democracies." *American Journal of Political Science* 48, no. 3 (2004): 521-537.

Morgenstern, Oskar, and John Von Neumann. *Theory of games and economic behavior.* Princeton university press, 1953.

9 Figures

Figure 1: Perceived pivotal probability as a function of perceived closeness of the election.
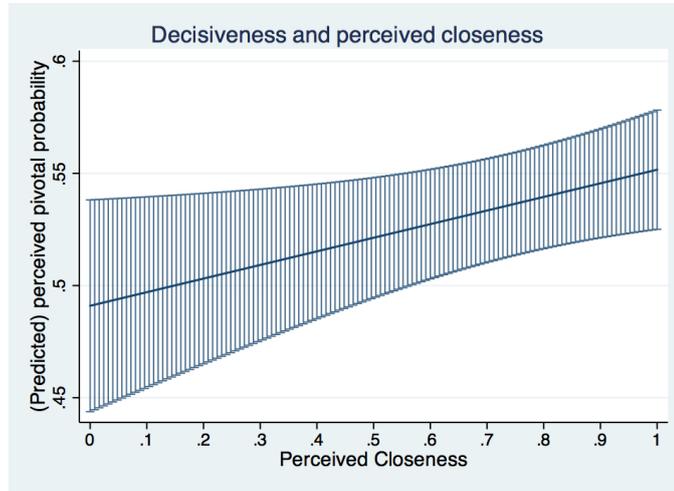
Data: Experimental data collected by Simon Labbé St-Vincent. See St-Vincent (2013) for details, in particular p. 797. 16 experimental sessions with 21 subjects each, choosing among 4 parties for 20 consecutive rounds under different electoral rules. Before each round t, all subjects i were asked both about their own chances of being decisive, and the chances of each of the four parties winning the election. For 'first past the post' elections, 'Perceived Closeness'=1-(Chances expected winner - Chances expected runner-up). That is, if the two perceived front-runner parties had equal chances, 'Perceived Closeness'=1. If two parties were elected (PR treatments), 'Perceived Closeness'=1-(Chances expected 2nd - Chances expected 3rd). 'Predicted perceived pivotal probabilities' in the vertical axis are the predicted probabilities from the model $Own\_decisiveness_{it} = \alpha + \gamma Perceived\_closeness_{it} + X_i\beta + \varepsilon_{it}$, where i is subject, t is the round and X includes gender, major (science or not), political interest and experimental session fixed effects. Standard errors are clustered at the individual level. $\hat{\gamma}$ is significant at the 5% level. Results for $\hat{\gamma}$ are robust to many different specifications and available upon request. Data from the treatment in which the number of parties elected is uncertain is excluded (i.e. 4 out of the total of 16 experiments). Hence, 5,040 observations for a total of 252 subjects are used. All experiments were conducted in French. The wording of the key question on $Own\_decisiveness_{it}$ was: "Indicate your perception of the chances that your vote will decide who will win (scale of 0-10)" [Indiquer votre perception des chances que votre vote décide qui va gagner (échelle de 0-10)]. Data is re-scaled here to fit actual probabilities.

Figure 2: Turnout probability for individuals who believe at least two coalitions have maximum (equal) chances of being formed after the elections (i.e. 'Chances most likely = Chances 2nd most likely').
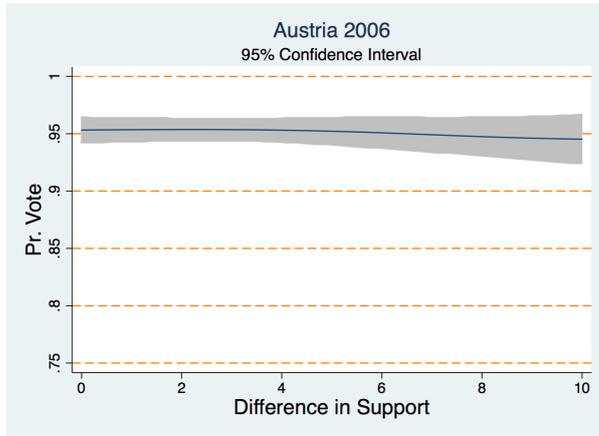
(a) N=1,079 (58.8% of the sample).
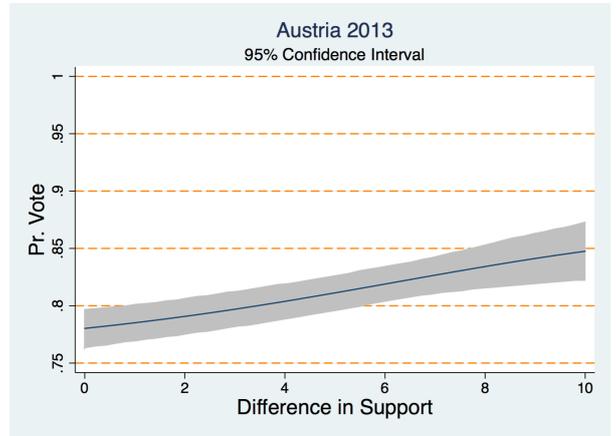
(b) N=1,143 (39.3% of the sample).
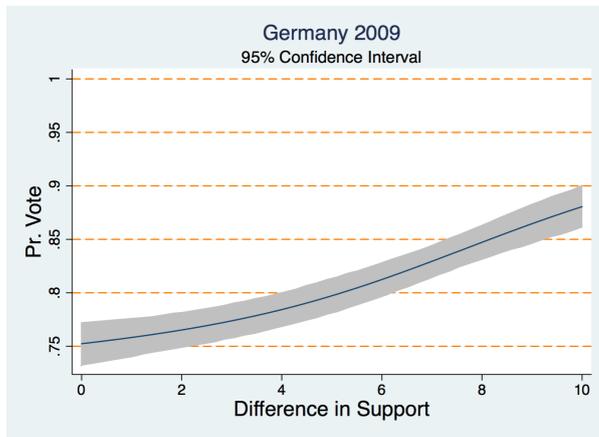
(c) N=949 (48.4% of the sample).
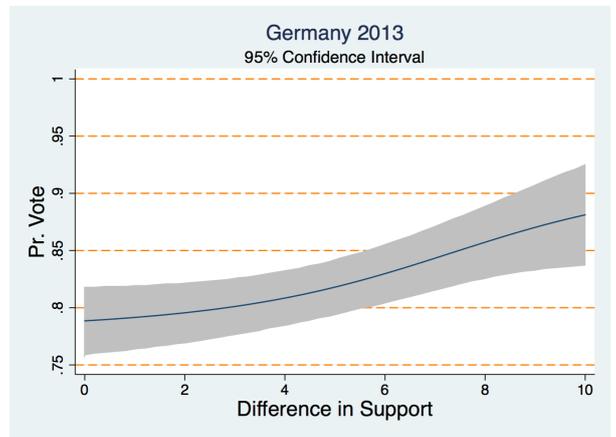
(d) N=343 (18.7% of the sample).
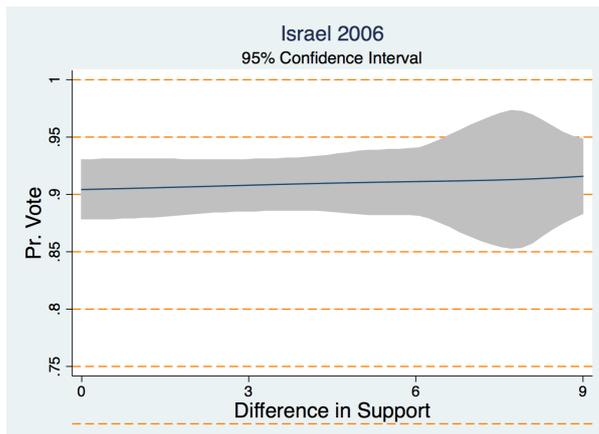
(e) N= 369 (33.3% of the sample).
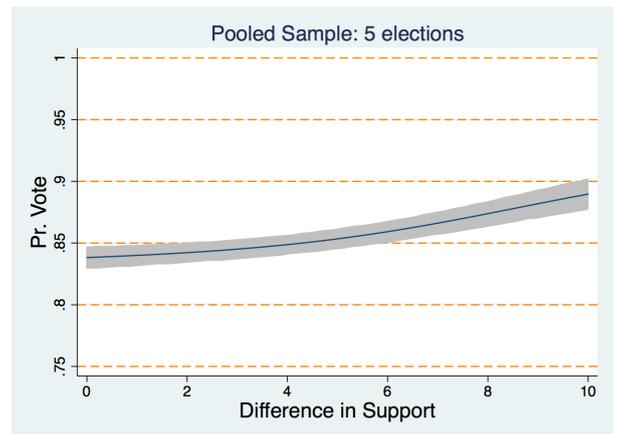
(f) N=3,896 (41.2% of the sample).

'Difference in Support': 'Support for most preferred among the most likely coalitions' - 'Support for second most preferred among the most likely coalitions'.

Estimation: partially linear estimation using Robinson's (1988) double residual semiparametric regression estimator (half-bandwidth=3). The shaded areas represent 95% confidence intervals. See expression (4) for the exact regression specification, and Section 1 in the Supplementary Materials. for details regarding the controls.

Figure 3: Turnout probability for individuals who believe they are not likely to be pivotal with respect to coalition formation. (i.e. 'Chances most likely >> Chances 2nd most likely').

(a) N=409 (22.3% of the sample).

(b) N=333 (11.4% of the sample).

(c) N=141 (7.2% of the sample).

(d) N=135 (7.4% of the sample).

(e) N=63 (5.7% of the sample).

(f) N=1,053 (10.9% of the sample).
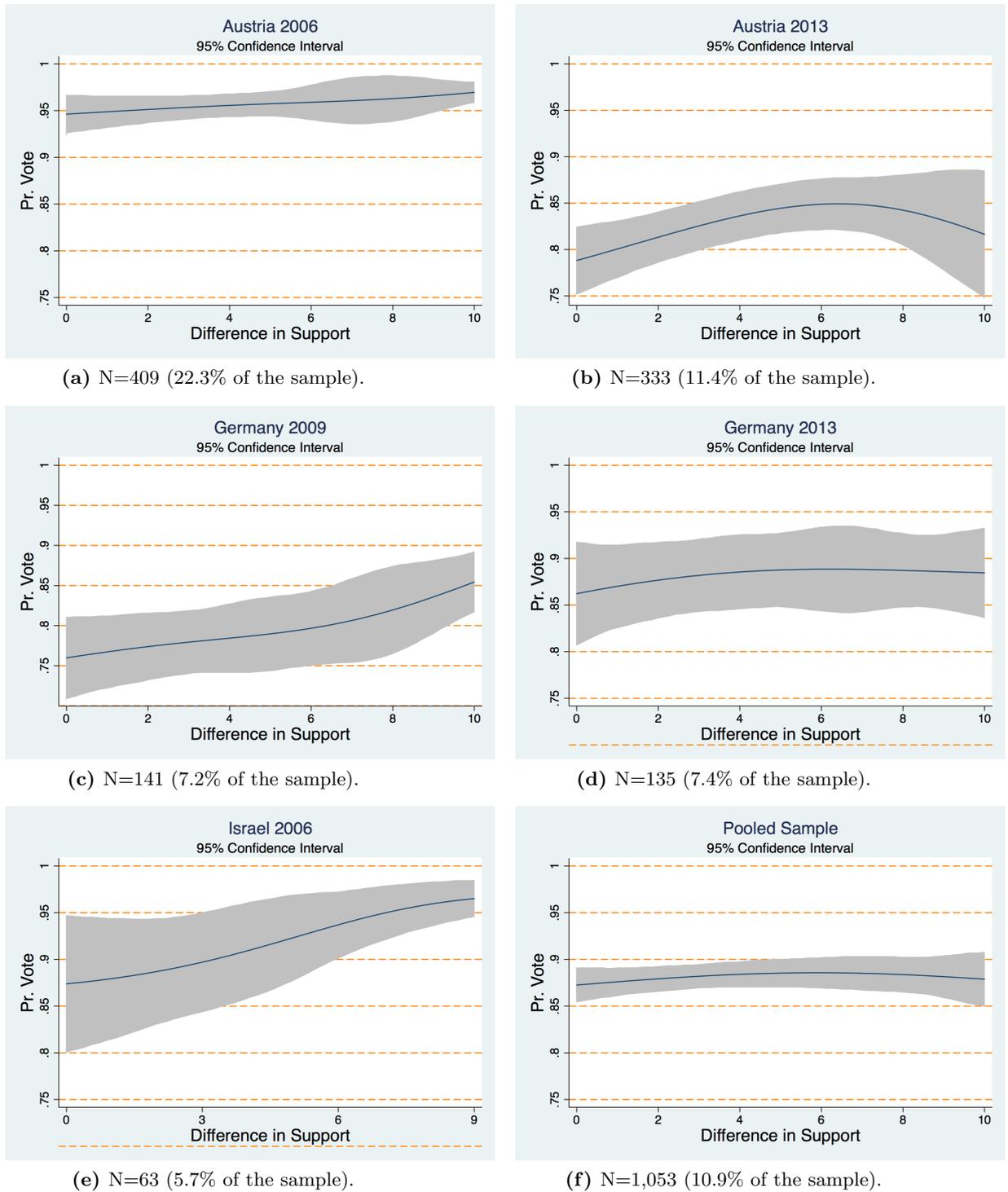
'Difference in Support': Difference in support between the two most likely coalitions. In case more than two are considered to be 2nd most likely coalitions, the most preferred in the set is considered.

Estimation: partially linear estimation using Robinson's (1988) double residual semiparametric regression estimator (half-bandwidth=3). The shaded areas represent 95% confidence intervals. See section 5 for details on the regression specification and sample used, and, in particular, footnote 10 for the subsample used for Austria 2006. For details regarding the controls, see Section 1 in the Supplementary Materials.

10 Tables

Table 1: Comparison of the average reported probability of turnout with actual turnout rates.

	Austria		Germany		Israel
	2006	2013	2009	2013	2006
Average probability	0.94	0.79	0.78	0.83	0.88
Actual elections turnout	78.49%	74.91%	70.8%	71.5%	63.55%

Sample: all respondents.

Table 2: Turnout probability for individuals who believe the two leading coalitions are equally likely

	Austria		Germany		Israel	Pooled sample
	2006	2013	2009	2013	2006	(weighted)
Panel A: Indifferent between both coalitions						
Average probability	0.95	0.74	0.68	0.79	0.89	0.79
Observations	285	272	195	89	183	1,024
Panel B: Strongly prefer one coalition over the other one						
Average probability	0.95	0.86	0.92	0.90	0.92	0.89
Observations	108	71	107	43	19	348

Sample: voters who believe the top two most likely coalitions have the exact same chances of being formed. Panel A: exact same level of support for both coalitions. Panel B: Difference in support of 8 points or more, where support $\in [0, 10]$ ($\in [1, 10]$ for Israel).

Table 3: Pooled sample. Turnout probability for individuals who believe the two leading coalitions are equally likely. Linear regression.

	(1)	(2)	(3)
Difference in support between the two leading coalitions	0.009*** (0.002)	0.003* (0.001)	0.004** (0.001)
Max. support for a party		0.059*** (0.003)	0.029*** (0.003)
Mean party support		-0.013*** (0.004)	0.005 (0.004)
Age			0.001*** (0.000)
Female			0.015 (0.008)
Political interest			0.262*** (0.019)
Political knowledge			0.063*** (0.012)
Education			0.008* (0.004)
Strength of party ID			0.018*** (0.002)
Other Controls	YES	YES	YES
Country FE	NO	NO	YES
R^2	0.01	0.12	0.26
Observations	4,222	4,128	3,804

Standard errors are in parentheses. ***$p < 0.01$ **$p < 0.05$ *$p < 0.1$

Dependent variable: Probability of voting.

Sample: all respondents who believed at least two coalitions were leading the race with exact same changes.

Other controls: Difference in support between two most preferred parties. All controls are normalized: Political Interest $\in [0,1]$, Political Knowledge $\in [0,1]$, Max. Sympathy for a party $\in [0,10]$, Strength Party ID $\in [0,5]$, Education $\in [1,5]$.

Specification: $Pr.(vote_i) = \alpha + X_i\beta + POL_i\gamma + (U_{ia} - U_{ib})\delta + \varepsilon_i \mid p_{ia} = p_{ib} \geq p_{ic}$ for some a, b and $\forall\ c \in \mathcal{C}$

Table 4: Pooled Sample. Effect on turnout of not being able to determine the expected policy of the different coalitions (columns 1-2); or to assess the chances of the different coalitions (columns 3-4).

	Policy uncertainty		Likelihood uncertainty	
	(1)	(2)	(3)	(4)
Equal support for leading coalitions	-0.004	-0.008	-0.012	-0.011
	(0.011)	(0.012)	(0.009)	(0.010)
Uncertainty	0.024	0.006	-0.143**	-0.031
	(0.024)	(0.011)	(0.049)	(0.017)
Equal support × Uncertainty	-0.009	0.013	-0.002	-0.023
	(0.044)	(0.023)	(0.109)	(0.0340)
Max. support for a party	0.027***	0.027***	0.028***	0.028***
	(0.004)	(0.004)	(0.003)	(0.003)
Mean party support	0.008	0.008	0.006	0.005
	(0.004)	(0.004)	(0.004)	(0.004)
Age	0.001**	0.001**	0.001***	0.001***
	(0.000)	(0.000)	(0.000)	(0.000)
Female	0.011	0.011	0.010	0.011
	(0.008)	(0.008)	(0.008)	(0.008)
Political interest	0.247***	0.247***	0.250***	0.251***
	(0.020)	(0.020)	(0.019)	(0.019)
Political knowledge	0.070***	0.070***	0.059***	0.060***
	(0.012)	(0.012)	(0.012)	(0.012)
Education	0.008*	0.008*	0.010**	0.010**
	(0.004)	(0.004)	(0.004)	(0.004)
Strength of party ID	0.019***	0.019***	0.018***	0.018***
	(0.003)	(0.003)	(0.002)	(0.002)
Other Controls	YES	YES	YES	YES
Country FE	YES	YES	YES	YES
R^2	0.25	0.25	0.25	0.25
Observations	3,120	3,120	3,710	3,710

Standard errors are in parentheses. $^{***}p < 0.01$ $^{**}p < 0.05$ $^{*}p < 0.1$

Dependent variable: Probability of voting.
Sample: all respondents who believed at least two coalitions were leading the race with exact same changes (i.e., individuals who responded about perceived chances for at most one coalition are excluded from the sample), who can determine their support for at least two parties, and who can assess their own position in the Left-Right political spectrum .
Measures of uncertainty:
(1) % of coalitions for which the respondent cannot determine its location in the policy space (Germany 2013 and Austria 2013); % of parties that the respondent cannot locate in the policy space (Israel 2006, Austria 2006 and Germany 2009).
(2) Dummy that takes value 1 if the measure in (1) is strictly positive.
(3) % of coalitions for which the respondent cannot assess its chances of being formed.
(4) Dummy that takes value 1 if the measure in (3) is strictly positive.
Other controls: Difference in support between two most preferred parties. All controls are normalized: Political Interest $\in [0,1]$, Political Knowledge $\in [0,1]$, Max. Sympathy for a party $\in [0,10]$, Strength Party ID $\in [0,5]$, Education $\in [1,5]$.
Israel 2006 does not have "Don't know" and "No Answer". They are inferred from missing datapoints.