

# **When to Coalesce: Early versus Late Coalition Announcement in an Experimental Democracy**

ROBERT E. GOODIN, WERNER GÜTH and RUPERT SAUSGRUBER\*

In multi-party democracies, several parties usually have to join together in coalition to form government. Many aspects of that process have been fairly fully investigated, others less so. Among the latter is the timing of the formation and announcement of coalitions.<sup>1</sup>

While the dominant popular image may be one of parties meeting together after the election to hammer out a coalition agreement, pre-election coalitions of one sort or another are actually quite common. In almost half of the elections in OECD countries since World War II, at least one pair of parties had pre-announced their intention to join together in government. A quarter of governments formed were based wholly (and another quarter in part) on pre-election agreements.<sup>2</sup>

To date, such studies as there have been of pre-election coalitions have concentrated primarily on system-level explanations – features of the electoral system (majoritarian or proportional, and so on) that make such arrangements more or less likely.<sup>3</sup> Here we shall instead look more at the agent-level logic of ‘early’ (pre-election) versus ‘late’ (post-election) coalition formation, from the point of view of voters and parties.

## **I. Hypotheses Concerning Coalition Timing**

In the tradition of Downs and Riker and their coalition-theorist progeny, we shall assume that voters are interested primarily in getting policies adopted which are close to their 'ideal points' in policy space, and that parties are interested primarily in winning office to implement policies as close as possible to their 'ideal points' in policy space.<sup>4</sup> That leads parties to strive for 'minimal connected winning coalitions': 'connected' in the sense that they link parties adjacent in policy space; 'minimal' in the sense that they involve the party's sharing power with the fewest parties backed by fewest voters that it can and still win.<sup>5</sup>

That way of thinking about politics leads to the following hypotheses concerning the timing of coalition formation.

**Hypothesis 1 (Coalition size):** *Parties will form larger-than-necessary coalitions more often in the early versus late coalition-formation scenario.*

The rationale for Hypothesis 1 derives from the greater uncertainty in the 'early' case, and from the desire of risk-averse parties to protect against it. Not knowing how many votes each other will have, risk-averse parties in the 'early' case would be expected to agree to coalitions that might ultimately turn out to be unnecessary or larger than necessary to win. In the 'late' case, where parties know how many votes each can bring to the coalition, they would be expected to prefer coalitions no larger than strictly necessary to form government: to maximize their share of policy influence within the coalition government, parties want to limit the number and especially the strength within the coalition of other parties with whom they share power.

**Hypothesis 2 (Coalition connectedness):** *Parties will form coalitions in which all members are connected to one another in policy space more often in the early versus late coalition-formation scenario.*

The rationale for Hypothesis 2 derives primarily from the fact that in the 'late' case parties are in a position to make trade offs between two desiderata when choosing coalition partners ('minimum winning' and 'connected'), whereas in the 'early' case the uncertainty surrounding the number of votes each party will have leads them to concentrate on the 'connectedness' dimension alone in choosing coalition partners. That would lead us to expect coalitions to be more 'connected' in the 'early' case and less so in the 'late' case.<sup>6</sup> A coalition is 'connected' if there is no party that is not a member of the coalition whose position lies between the positions of two parties who are members. 'Connectedness' can be assessed either on the basis of parties' publicly announced policy positions (which we will call 'public connectedness') or on the basis of party leaders' private policy preferences (which we will call 'private connectedness').

**Hypothesis 3 (Relational contracting):** *Parties will form coalitions even when they could have formed government in their own right more often in the early versus late coalition-formation scenario.*

The rationale for Hypothesis 3 derives from the fact that arrangements among parties in the 'early' case are 'relational contracts', linking parties who might need one another in the future to form a coalition.<sup>7</sup> The usual version of the relational contracting story is in terms of relationships that endure over long periods of repeated interactions: even if one party could form government in its own right on the present occasion, it

might need the votes of the other to form government on some subsequent occasion (or parallel occasion, in some other state in a federal country). But even in a one-shot game, forming an 'early' coalition before the election amounts to a relational contract by which parties bind themselves to join together in government, even if in the end one of them could have governed in its own right. In the 'late' case, coalition formation is more a matter of parties 'buying' the partners that they need to form a winning coalition on this particular occasion on a 'spot market', in which everyone knows exactly how many votes each has to offer. In the 'late' case we would therefore expect it to be less likely for parties with enough votes to govern in their own right to take on coalition partners. A coalition will be said to contain a 'superfluous' party if one of the members of the coalition could have governed in its own right.

**Hypothesis 4 (Strategic voting):** *Voters will engage in more strategic voting in the early versus late coalition-formation scenario.*

The rationale for Hypothesis 4 rests on the fact that voters have better information in the 'early' case than 'late'. Specifically, in the 'early' case, voters know which parties will join together in a coalition (if they get enough votes among them to form government); in the 'late' case, in contrast, voters do not know what coalitions will be formed at the time they cast their votes. Because voters are better able to calculate the consequences of their party choices in the 'early' case than the 'late', we would expect them to engage in more strategic voting in the 'early' case compared to the 'late'. An ordinary voter is said to have voted 'strategically' if s/he votes for a party whose announced policy position is more distant from that voter's own preferred

policy position, when there exists some other party whose position is closer to the voter's own. (A party leader is said to have voted 'strategically' in that case as well, unless the party s/he has voted for is in fact his or her own party.)

## **II. Modelling Coalition Formation Experimentally**

Many theoretical predictions about coalition formation, payoffs and duration are easily tested using data from actual political events. It is more difficult to test counterfactual propositions concerning coalition timing in that way. There is little survey data concerning how voters would have voted had they had different expectations about what coalitions would form after the election; there is even less data concerning what parties would have done, had they coalesced sometime other than they did.

Here we pursue an alternative, complementary strategy for investigating issues of coalition timing. We use laboratory experiments to explore in a more controlled way the question of whether there are any systematic differences between forming coalitions 'early' rather than 'late'. Experimental findings always confront questions of external validity, of course – which is why experimental studies like ours ought always be seen as supplementing field research, rather than substituting for it. These experiments are at most 'illustrative' of what might really happen among real political actors, experienced in ways our experimental subjects are not. Still, these experimental results are genuinely illustrative -- and they are part of a venerable psychologically-inspired experimental tradition within political science.

In this section, we describe our experimental democracy model and its implementation in some detail.<sup>8</sup> At various points, we stipulate certain relations and parameters in order to render the model operationally determinate. In doing so we strive to make our stipulations track empirical findings, where the empirical facts of

the matter seem to be settled; otherwise, we opt for the more traditional and simplest specifications.

### **A. The experimental democracy**

Our experimental democracy consists of  $n=7$  individuals who all have equal voting rights. Three of the 7 individuals represent a party  $P_i$ ,  $i=1,2,3$ ; the other four individuals  $V_i$ ,  $i=4,5,6,7$  are only voters. In the following we will refer to participants  $P_i$ ,  $i=1,2,3$ , as '*P-participants*' or '*parties*' or '*party leaders*' and to participants  $V_i$ ,  $i=4,5,6,7$ , as '*V-participants*'. Since both *P-participants* and *V-participants* cast votes in our experiment, the term 'voters' includes both kinds of participants. In a given voting period each of the 7 individuals ( $i=1, \dots, 7$ ) is assigned a confidential randomly-determined evaluation  $E_i$  representing his or her ideal political position.<sup>9</sup>

Incentives for behaviour are induced by the following specification of payments. First, parties and *V-participants* are paid according to the distance between their evaluation values and the 'government platform'. The government platform is either:

- the platform of the majority winner (i.e., the platform chosen by the party which has won 4 or more votes in the election), regardless whether or not s/he forms a coalition by including another party as coalition partner; or otherwise
- the vote-weighted platform of the coalition partners; i.e., if the government coalition consists of the two parties,  $P_i$  and  $P_j$ ,  $i \neq j$ , with platforms  $p_i$  and  $p_j$  and number of votes  $v_i$  and  $v_j$ , then the government platform is the vote-weighted number

$$P = [v_i/(v_i+v_j)] p_i + [v_j/(v_i+v_j)] p_j.$$

Second, parties in the government receive a ‘governance premium’,  $G$ . If the government consists of just one party, this party receives the total governance premium. If there is a coalition, the coalition partners who form the government share the governance premium in proportion to their votes. With the government coalition consisting of  $P_i$  and  $P_j$ ,  $i \neq j$ , the party  $P_i$  would get a governance premium of  $G_i = [v_i/(v_i+v_j)]G$  whereas party  $P_j$  would get  $[v_j/(v_i+v_j)]G$ .

Government platform and government premiums determine payments as follows:

- A  $V$ -participant earns a fixed endowment,  $F$ , minus the distance of  $P$  from the own evaluation value, i.e.,  $\pi_i(\text{voter}) = F - |P - E_i|$  where  $E_i$  denotes the evaluation value of the  $V$ -participant  $i$ .
- A party not in the government earns a fixed endowment,  $F$ , minus twice the distance of  $P$  from the own evaluation value, i.e.,  $\pi_i(\text{party out}) = F - 2|P - E_i|$  where  $E_i$  denotes the evaluation value of the individual party  $i$  not in the government.
- A party in the government earns its share of the governance premium plus a fixed endowment,  $F$ , minus twice the distance of  $P$  from the own evaluation value, i.e.,  $\pi_i(\text{party in}) = G_i + F - 2|P - E_i|$  where  $E_i$  denotes the evaluation value of the individual party  $i$  in the government.<sup>10</sup>

The three parties  $P_i$  choose platform  $p_i$ . Parties can choose any platform that they like, irrespective of what the individual  $P_i$  prefers (i.e., irrespective of his/her  $E_i$ ). Thus parties can play strategically, choosing a platform by which they hope to collect

enough votes to win. Alternatively, they can play 'sincerely', being guided by their own evaluation values  $E_i$  in choosing a platform close to that value. Since payoffs to parties depend in part both on winning office and on having a programme close to their preferred one implemented, parties have an incentive in each direction.

In the LATE-treatment case, our model assumes that voters decide between the parties  $P_1$ ,  $P_2$  and  $P_3$  purely on the basis of their announced political platforms ( $p_1$ ,  $p_2$ , and  $p_3$  respectively). In our experimental democracy model, this is all that participants are aware of when voting takes place (although the  $P$ -participants representing parties  $P_i$  are, of course, aware of their own personal intentions). If, however, the plans for coalition formation are revealed before the election, voters are also aware of each party's intention regarding coalition formation. Thus in the EARLY-treatment case voters have a better idea how voting will determine the governing coalition (if one is needed or wanted) and its platform.

## **B. Coalition formation**

Given that there are only three parties and four  $V$ -participants (i.e., seven voters altogether), a coalition or party has to collect four votes or more to form the government.

If no single party is the majority winner we need to impose specific rules to determine what will happen. There are two cases to consider. Either (i) two parties have two votes each and the third has three votes or (ii) two parties have three votes each and the third has one vote only.

In those cases we impose a rule of 'asymmetry avoidance'.<sup>11</sup> Following that rule, the coalition that is formed will be the one with equal partners – those having two votes each in case (i); those having three votes each in case (ii) – if both parties

have specifically opted for this coalition outcome. Otherwise the third party in each of those cases gets her/his preferred partner.

### **C. Treatments and Order of Events**

In both EARLY and LATE treatments, evaluations  $E_i$  for  $i=1, \dots, 7$  can be any random number (drawn for a uniform distribution) in the interval from 0 to 50. Parties can choose any platform within this interval. In both treatment cases, the decision process is of this form:

- first, party players' evaluation values are randomly determined;
- then, parties' platforms  $p_1, p_2$  and  $p_3$  are chosen independently by the parties and publicly announced.

After that, the process depends on the treatment. Broadly speaking, here is how it goes. In LATE, all seven individuals then vote, being aware of  $p_1, p_2$  and  $p_3$  only; and thereafter the party players decide about the government, aware of the voting result. In EARLY these two stages are reversed: first parties decide their individual plans regarding coalition formation, which are then made public; then, knowing also the plans of all three parties regarding coalition formation, voters decide among parties in light of their own personal evaluation values as well as the platforms and coalition plans of the three parties.

Since this is the point at which our two treatments crucially differ, let us set out the procedures in each in more detail. In LATE the order of event is this:

1. Party players choose their platforms.
2. All subjects are informed about the platforms chosen by the party players.
3. All subjects vote among the three parties. Every participant has one vote and decides which of the 3 party players to vote for.
4. All subjects learn the outcome of the vote.
5. Party players decide whom they will choose as coalition partner. The choice of the coalition partners and the outcome of the vote determine the government platform.

6. The payoffs of subjects are calculated.
7. Another period starts, subjects are assigned new evaluations and all steps are repeated.

In EARLY party players have to announce their coalition plans before subjects vote, i.e., what was step 5 in LATE follows immediately after step 2 in EARLY. The order of event in the EARLY is then:

1. Party players choose their platforms.
2. All subjects are informed about the platforms chosen by the party players.
3. Party players decide whom they will choose as coalition partner in case they have the opportunity to choose. Whether a party player has this opportunity is determined later in step 5 by the outcome of the vote. The choice is binding. The choice of the coalition partner will later together with the outcome of the vote determine the government platform.
4. All subjects are informed about whom the party players choose as coalition partners in case they have an opportunity to choose.
5. All subjects vote between the three party players. Every participant has one vote and decides whom out of 3 party players to vote on.
6. All subjects learn the outcome of the vote and the government platform.
7. The payoffs of subjects are calculated.
8. Another period starts, subjects are assigned new evaluations and all steps are repeated.

In step 3 in treatment EARLY each party player  $P_i$ ,  $i=1,2,3$ , has to make three choices. First,  $P_i$  chooses:

- 3a. whom among the other parties s/he selects as coalition partner in the case that s/he will have an opportunity to choose;

We could have left it at that, by assuming that either there is a majority winner who then forms the government and its platform, or else a government coalition forms according to the rules specified above. To render the choice of potential coalition partner more important, however, we also allowed coalitions to form even where a single party is already a majority winner. Each party player  $P_1$ ,  $P_2$  and  $P_3$  is asked to state:

- 3b. if s/he is the majority winner, would s/he still want to include her/his preferred coalition partner chosen according to 3(a) in her governing coalition; and
- 3c. if, in case his/her preferred partner is the majority winner, does s/he still want to be included in that other party's governing coalition.

The majority winner would form a coalition, including its preferred partner, only when both parties (the majority winner itself and its preferred partner) opt for this. If this happens, the government platform is still the platform of the majority winner. All that the partner gets from forming the government is a proportional share of the governance premium  $G$ , which is always shared proportionately (according to vote shares) between the parties forming the government.

## **V. Experimental Results**

The experiment was performed with 112 participants (56 in each treatment, EARLY and LATE) all students of Jena University.<sup>12</sup> A session comprised four groups with seven participants each. We performed two sessions for both treatments so that one data file consists of eight independent groups per treatment. Each session ran over 20 rounds, yielding altogether 160 election periods for each treatment case.

When arriving in the computer laboratory, participants were seated at visually isolated computer terminals. Participants received written instructions that they had to read carefully. Subjects faced two unpaid practice periods. After these two practice periods, the experiment was paused and all remaining questions of subjects answered. Then the experiment was run for 20 paid periods. Payments were made privately after the last round.

Average earnings were Euro 20 (including a Euro 2.5 show-up fee) for approximately 1.5 hours. Payoffs were in ECU (experimental currency unit) where ECU 100 corresponded to Euro 0.9. In the experiment, the fixed per-period endowment,  $F$ , for both  $V$ -participants and parties is set at  $F = 100$  points. The governance premium is set at  $G = 100$  points.<sup>13</sup>

Table 1 shows all coalitions that formed governments in the experiment, by treatment and vote distribution. The entry '6:1' for example denotes a case where a

coalition formed between a party with 6 votes and a party with 1 vote; Table 1 shows, that this occurred twice in treatment EARLY and never in treatment LATE.

There is no significant 'learning' effect over the course of the experiment: the first ten periods are not significantly different from the second 10 in any respect.

Table 1 reveals that there is a pronounced difference in the number of coalitions between treatments EARLY and LATE. In EARLY, coalitions formed on 147 out of the 160 possible occasions. In LATE the corresponding number is 64 out of the possible 160 possible occasions. That difference is highly significant ( $p=0.000$ , 2-sided).<sup>14</sup> The question, now, is whether the hypotheses outlined above can contribute significantly to explaining key features of this difference.

**[Table 1 about here]**

Our Hypothesis 1 (Coalition size) predicts that parties will form larger-than-necessary coalitions more often in the EARLY than in LATE. 'Minimum winning coalitions' are coalitions that have the smallest possible number of votes and still win, given the distribution of votes among the parties. In terms of our experiment, that consists of cases in which the coalition has exactly 4 votes: i.e., cases where the distribution of votes is 3:1 or 2:2.<sup>15</sup> 'Larger than minimum size coalitions' consist in cases in which the coalition formed has more than the smallest possible number of votes required to win, given the distribution of votes among parties: i.e., cases where the distribution of votes is 3:3, 3:2, 4:3, 4:2, 4:1, 5:2, 5:1 or 6:1.<sup>16</sup>

Table 2 shows two things. The first is the number per treatment of coalitions that are larger than necessary.<sup>17</sup> In EARLY, adding the first two columns of Table 2 we see that 31 coalitions are minimum-sized and (adding the second two columns) 103 are larger than minimum winning. In LATE, in contrast, 34 coalitions are

minimum-sized and only 30 are larger. The difference between treatments is highly significant ( $p=0.027$ ). These findings are consistent with hypothesis 1. Subjects in the EARLY treatment do indeed seem to have risk-avoidance incentives that outweigh the cost (sharing the premium  $G$ ) of forming the coalition.

Our Hypothesis 2 (Coalition connectedness) predicts that parties will form coalitions in which all members are connected to one another in policy space more often in EARLY than in LATE. Coalitions are said to be 'connected' by virtue of the positions of member parties in policy space. A coalition is 'connected' (in the 'public' sense) if there is no party that is not a member of the coalition whose policy position falls in between the positions of the parties who are members of the coalition. If there is such an omitted party with a position in between those of coalition members, the coalition is 'not connected'. Table 2 reports the number of cases where the announced positions of the coalition partners do not include the position of the remaining third party.

Table 2 reveals a modest but real difference regarding the number of connected coalitions between treatments. Adding together the first and third columns in Table 2 we see that 128 out of the total 134 coalitions in EARLY are connected, or 95 percent. In LATE 76 percent (49/64) of all coalitions are connected. This difference is (weakly) significant ( $p=0.062$ , one-sided).

There is another sense of 'connectedness' of coalitions, dealing in terms of the private rather than publicly announced positions of coalition partners. This version of Hypothesis 2 predicts that parties choose as their preferred coalition partner the party whose platform is closest to their own private *evaluation value* ( $E_i$ ).<sup>18</sup> In LATE, parties choose the party closest to them as coalition partners on average in 0.306 of all (480) cases. In EARLY, this number is 0.488. This difference is significant ( $p=0.006$ , two sided).

Our Hypothesis 3 (Relational contracting) predicts that parties will form coalitions even when they could form government in their own right more often in the EARLY than in LATE. We will call a party that is a member of the coalition 'superfluous' if that coalition could have formed government (i.e., had at least 4 votes) without including that party.

As seen in Table 3, in EARLY there were 147 cases where parties formed a coalition. In 50 percent (74/147) of these cases a superfluous party was included in the coalition, i.e., the coalition contained a majority winner.<sup>19</sup> In LATE, only 5 percent (3/64) of all coalitions included a party which was superfluous. This difference is highly significant ( $p=0.001$ , two sided).

**[Table 3 about here]**

Finally, we address our Hypothesis 4 (Strategic voting). This hypothesis predicts that voters will engage in more strategic voting in EARLY than in LATE. A voter is said to engage in 'strategic voting' whenever voting for any party other than the one whose position is closest to the voter's own evaluation in policy space.

Looking at voters overall -- taking *V*-participants and party *P*-participants together -- it looks as if this hypothesis is confirmed. In EARLY, 33 percent of all votes are strategic and 67 percent are sincere. In LATE the respective percentages are 22 and 78. This difference is significant ( $p=0.006$ , two sided).

Separating those two groups of voters, however, there is a treatment effect only for the party leaders (*P*-participants). Among *V*-participants, the share of strategic votes is 14 and 13 percent in EARLY and LATE, respectively, which is not remotely significant ( $p=0.527$ ). However, among party leaders (*P*-participants), 59

percent of all votes are strategic in EARLY, compared to 34 percent in LATE, which is significant ( $p=0.005$ ).

In principle, it may be that *P*-participants are strategic not so much in their voting as in the location of their party's announced position. That is to say, in hopes of increasing their share of votes, parties may sometimes choose a platform position that is different from their own privately-preferred point in policy space; and sometimes those two points are so different that some other party's announced position is closer to the *P*-participant's own privately-preferred point than that *P*-participant's own announced position. If in such a case a *P*-participant votes for himself (i.e., the party s/he represents), then it looks as if s/he is voting 'strategically' for some party other than the one s/he really prefers, which is true enough in one sense but obviously not in another. Table 4 shows that to be a relevant phenomenon in our experiments.

[Table 4 about here]

Table 4 shows the frequency of two forms of 'sincere' voting on the part of *P*-participants, firstly voting for their own party and secondly voting for some other party that is closer to the *P*-participant's own evaluation point. 'Strategic' voting, in contrast, occurs when the *P*-participant votes neither for his/her own party nor for the party closest to his/her own evaluation value. Even redefined in that broader way, strategic voting is still prevalent among *P*-participants – and much more so in EARLY than LATE. In EARLY, 54 percent (258/480) of all votes are strategic, compared to 13 percent (64/480) in LATE, which is highly significant ( $p=0.001$ , two sided). These results indicate party *P*-participants use the additional information provided in EARLY in order to vote strategically.

Figure 4 also shows important differences in the form of sincere voting practiced by *P*-participants, in EARLY as compared to LATE. Sincere voting takes the form of party leaders voting for their own party 68 percent of the time in EARLY, compared to 94 percent of the time in LATE. That difference is highly significant ( $p= 0.001$ , two-sided). It is also consistent with the thrust of our Hypothesis 4. In LATE, not knowing with whom they will form a coalition, party leaders have to vote for their own parties in order to increase their bargaining power in post-election coalition formation. In EARLY, in contrast, they know their coalition partners at the time of voting, and a party leader can safely vote for another member of his/her coalition if that party's position is closer to his/her own personal policy preference.

## **VI. Conclusion**

The experimental results reported here confirm the hypotheses that are implied by the Downs-Riker model of coalition formation about the consequences of parties announcing their coalition intentions early, ahead of the election itself, rather than waiting until after the election to do so.

Parties that announce their coalition intentions before the election are more likely to form coalitions that are 'connected' in terms of policy positions of coalition members, but at the expense of forming coalitions containing more votes than necessary to win. Indeed, in the relational contracting involved in forming coalitions before the election, parties are more likely to include parties that not strictly needed to win government.

All of that serves to confirm that the practice of announcing coalition intentions ahead of the election itself leads parties to do things that would be seen to be disadvantageous for them, from a Downs-Riker point of view.<sup>20</sup> From that same point of view, that practice ought to be advantageous for voters, insofar as it gives

them a better idea what they are 'buying' when casting their vote for any given party. On the evidence of this experiment, voters in general seem not to take advantage of this better information; anyway they do not use it to vote more strategically, when coalition intentions are announced before they vote rather than after. A particular subset of voters -- voters who are also assigned the role of party leaders -- do however seem to use that information in precisely that way.

**Table 1:** Coalitions by vote distribution

Case	Periods 1 to 10		Periods 11 to 20		All periods	
	EARLY	LATE	EARLY	LATE	EARLY	LATE
7:0	1	0	0	0	1	0
6:0	1	0	1	0	2	0
6:1	2	0	0	0	2	0
5:0	1	0	1	0	2	0
5:1	4	1	4	0	8	1
5:2	3	0	2	0	5	0
4:0	4	0	4	0	8	0
4:1	13	1	10	0	23	1
4:2	6	1	9	0	15	1
4:3	3	0	5	0	8	0
3:1	4	1	12	1	16	2
3:2	21	5	11	7	32	12
3:3	4	9	6	6	10	15
2:2	8	20	7	12	15	32
Single party majority / No coalition	5	42	8	53	13	96
SUM	80	80	80	80	160	160

**Table 2:** Frequency of coalitions, minimal winning and larger, connected and not

Treatment	Minimum winning		Larger than minimum winning	
	connected	not connected	connected	not connected
EARLY	29	2	99	4
LATE	26	8	23	7
<i>N</i>	55	10	122	11

**Table 3:** Frequency of coalitions containing superfluous parties

Treatment	Contains no superfluous party	Contains some superfluous party	<i>N</i>
EARLY	73	74	147
LATE	61	3	64
<i>N</i>	134	77	211

**Table 4:** Strategic voting by party leaders

Treatment	party leader $P_i$ votes sincerely in the sense that:		party leader $P_i$ votes strategically	$N$
	party leader $P_i$ votes for $P_i$ 's own party	party leader $P_i$ votes for a different party nearer $P_i$ 's own private evaluation value		
EARLY	152	70	258	480
LATE	392	24	64	480
$N$	544	94	322	960

## Notes

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- \* Respectively: Social & Political Theory and Philosophy Programs, Research School of Social Sciences, Australian National University, Canberra, Australia <[goodinb@coombs.anu.edu.au](mailto:goodinb@coombs.anu.edu.au)>; Max Planck Institute of Economics, Jena, Germany <[gueth@econ.mpg.de](mailto:gueth@econ.mpg.de)>; and Department of Public Economics, University of Innsbruck, Austria <[Rupert.Sausgruber@uibk.ac.at](mailto:Rupert.Sausgruber@uibk.ac.at)>. We are grateful for assistance from Matthias Sutter and advice from John Aldrich, Albert Weale and anonymous referees.
- <sup>1</sup> As G. Bingham Powell rightly remarks, 'One area that cries out for more serious theoretical and empirical work is the appearance of announced preelectoral coalitions between political parties. We know too little about the origins of such coalitions and about the great variety of forms ... that they can take. But in a number of countries such coalitions unmistakably play a crucial role at both the electoral and legislative levels'; Elections as Instruments of Democracy: Majoritarian and Proportional Visions (New Haven, Conn.: Yale University Press, 2000), p. 247.
- <sup>2</sup> Sona Golder, 'Pre-election coalition formation in parliamentary democracies', British Journal of Political Science, 36 (2006b), 193-212 at p. 194 and The Logic of Pre-election Coalition Formation (Columbus: Ohio State University Press, 2006), p. 3; the number in each country is listed in her 'Pre-election coalitions in comparative perspective: a test of existing hypotheses', Electoral Studies, 24 (2006), 643-63 at p. 661. Cf. Kaare Strom and Wolfgang C. Müller, 'The keys to togetherness: coalition agreements in parliamentary democracy', The Uneasy Relationship Between Parliamentary Members and Leaders, ed. Lawrence D. Longley and Reuven Y. Hazen (London: Frank Cass, 2000). Earlier reports to the contrary are simply undercounts: cf. Golder, 'Pre-election coalition formation in parliamentary democracies', n. 20; and Lanny W. Martin and Randy Stevenson, 'Government formation in parliamentary democracies', American Journal of Political Science, 45 (2001), 33-50.
- <sup>3</sup> In addition to sources in footnote 2, see also Kaare Strom, Ian Budge and Michael J. Laver, 'Constraints on cabinet formation in parliamentary democracies', American Journal of Political Science, 38 (1994), 303-35.
- <sup>4</sup> Anthony Downs, An Economic Theory of Democracy (New York: Harper, 1957). William H. Riker, Theory of Political Coalitions (New Haven, Conn.: Yale University Press, 1962). For a masterful summary of the subsequent literature, see Arend Lijphart, Democracies: Patterns of Majoritarianism and Consensus Government in Twentny-one Countries (New Haven, Conn.: Yale University Press, 1984), ch. 4. See further: Donald Wittman, The Myth of Democratic Failure (Chicago: University of Chicago Press, 1995); Michael Laver, 'Models of government formation', Annual Reviews of Political Science, 1 (1998), 1-25; Wolfgang C. Müller and Kaare Strom, eds, Policy, Office, or Votes? How Political Parties in Western Europe Make Hard Decisions (Cambridge: Cambridge University Press, 1998).
- <sup>5</sup> Not sharing power with 'superfluous' parties that could have omitted has been the near-exclusive focus of recent work within coalition theory (Laver, 'Models of government formation', p 8). But empirical evidence on the allocation of ministerial portfolios within coalitions strongly suggests that coalition politics are weakly influenced by the number of parties and strongly influenced by the number of votes they bring to the coalition; Eric Browne and Mark Franklin, 'Aspects of coalition payoffs in European parliamentary democracies', American Political Science Review, 67 (1973), 453-69.
- <sup>6</sup> Another reason for coalitions to strive to be connected is that ideological coherence is required for electoral credibility, which is a consideration that will weigh more heavily on parties entering coalitions on the eve of elections than immediately after they are over.
- <sup>7</sup> Oliver E. Williamson, The Economic Institutions of Capitalism: Firms, Markets, Relational Contracting (New York: Free Press, 1985). Martin Brown, Armin Falk and Ernst Fehr, 'Relational contracts and the nature of market interactions', Econometrica, 72 (2004), 747-80.
- <sup>8</sup> The full 'Instructions' for both treatments can be obtained from the authors.
- <sup>9</sup> Again, for simplicity numbers were randomly drawn from a uniform distribution.
- <sup>10</sup> The doubling of the deduction in the latter two cases is designed to take on board the thought that parties are, if anything, more policy-oriented than ordinary voters. This is a continuing theme of Donald Wittman: Wittman, 'Parties as utility maximizers', American Political Science Review, 67(1973), 490-98; 'Candidate motivation: a synthesis of alternative theories', American Political Science Review, 77 (1983), 142-57; The Myth of Democratic Failure.

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- <sup>11</sup> Golder, 'Pre-election coalition formation in parliamentary democracies', pp. 206 ff. reports empirical evidence of this in the larger pre-election coalitions she has studied.
- <sup>12</sup> The experiment was computerized with the software package z-Tree; U. Fischbacher, z-Tree: Zurich Toolbox for Readymade Economics Experiments, IEW Working Paper No. 21 (Zurich: Institute of Empirical Research in Economics, University of Zurich, 1999).
- <sup>13</sup> There are no significant differences in aggregate payoffs between treatments. Notice that our design does not predict such differences in payoffs, so long as the winning platform lies in-between the evaluations of the most extreme parties/voters. In the democracy model outlined above, payments depend on the absolute difference between evaluation and winning platform. Consequently, in the vast majority of cases the sum of total payments is determined independently of behaviour by a random draw of evaluations. However, subjects affect their individual payments by their behaviour
- <sup>14</sup> We use the Wilcoxon-Mann-Whitney rank-sum test, based on independent group observations, for all the significance tests reported in this article.
- <sup>15</sup> We exclude 4:0. In one sense, it has no more votes than necessary to win (4); in another sense, it is larger than minimum sized (it includes a superfluous party, the party with 0 votes). The crucial factor, however, is that the governance premium  $G$  is not shared with the party with 0 votes. So including the party with 0 votes is costless to the party with 4 votes.
- <sup>16</sup> In principle, the cases 5:0, 6:0 and 7:0 are larger than minimum-sized coalitions, too. However, since the governance premium  $G$  is divided according to the distribution of votes, parties with 0 votes can be included in the coalition at no cost to the party with 5, 6 or 7 votes. Hence, these coalitions are not strictly dominated by minimum-sized coalitions.
- <sup>17</sup> The total number of cases in table 2 is 198, owing to the omission cases for the reasons described in the previous two footnotes.
- <sup>18</sup> The 'closed range' version of Hypothesis 2 assesses the policy position of a party in terms of the private policy preference of the party, whereas the 'connectedness' version of Hypothesis 2 assesses the policy position of party in terms of its publicly announced position.
- <sup>19</sup> Table 3 differs from the 'minimum winning coalition' analysis in Table 2 in including cases of 'relational contracting' even with parties with no votes in the current round of voting (i.e., cases of 4:0, 5:0, 6:0 and 7:0, excluded from Table 2 on the grounds that the governance premium  $G$  is not shared with parties with 0 votes).
- <sup>20</sup> In our experiment, too, including superfluous members in your coalition is costly. 'Majority winners' (parties with a majority of votes in their own right) who nonetheless formed a coalition earned on average 165.6 ECU, compared to 190.5 ECU for majority winners who did not form a coalition (significant at  $p=0.018$  on a Wilcoxon signed-rank test based on 9 pairs of independent group observations for which we can observe both cases, i.e., majority winners with and without forming a coalition).