

# The Paradox of Proportional Representation: The Effect of Party Systems and Coalitions on Individuals' Electoral Participation

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Empirical findings based on aggregate data have found that proportional representation (PR) has a mixed relationship with electoral participation. Large party systems, thought to be one of the benefits of PR in increasing turnout, instead depress turnout. This article examines two theories that seek to account for this paradox – that coalition governments resulting from larger party systems serve to depress turnout, and that larger party systems increase the complexity of the decision environment for voters. By combining individual-level data from the Comparative Study of Electoral Systems with contextual measures of effective number of parties, coalition structure and disproportionality, this article tests for interactions between the characteristics and attitudes of individuals and the contextual influences on electoral participation. The frequency of coalitions that violate the minimal-winning rule depresses turnout, especially among supporters of major parties. By accounting for variations in coalition governments, larger party systems appear, on balance, to enhance, rather than depress, individuals' propensity to vote. Limited evidence is reported that indicates that this participation-enhancing role of larger party systems is not evenly distributed across the electorate, as those lacking a university degree may find the decision environment created by larger party systems more complex.

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Most scholars agree that proportional representation (PR) is associated with higher levels of electoral participation. Generally, this relationship has been tested at the aggregate level with cross-national samples. Powell (1980) finds a 7.3 percent increase in turnout associated with PR in a study of thirty countries. Blais and Carty (1990) observe similar results, with PR associated with an increase of 7 percent in a study of twenty countries. Franklin (1996) reports a benefit of 12 percent for PR contained in his analysis of twenty-nine countries. The relationship between PR and higher turnout has also been demonstrated on samples of smaller jurisdictions within single countries. Turnout appears to be higher among Swiss cantons with PR (Ladner and Milner, 1999). Moreover, participation is estimated to have increased by around five percentage points among municipalities in the US that have recently adopted cumulative voting, when compared both to previous turnout levels under plurality arrangements and jurisdictions with similar demographic and to regional characteristics that have retained plurality rules (Bowler *et al.*, 2001).

It seems clear that PR matters, but the underlying reasons are not so obvious. Previous research has been typified by aggregate studies, which are fundamentally ill-suited to test hypotheses at the individual level. Although such an observation

does not undermine the extant findings, it becomes critical when considering causal hypotheses. The limitations of aggregate research have become manifest in the past several years, with the paradoxical finding that, whereas PR appears to enhance electoral participation, large party systems appear to depress political participation.

These results appear incongruous when one considers that institutional explanations for the relationship between PR and higher turnout (as opposed to cultural explanations) hinge, to varying degrees and levels of explicitness, on the nature of the party system fostered by institutional arrangements. Elites react to the incentives offered by the institutional arrangements by creating parties, which offer the mass electorate more meaningful choices and greater mobilization efforts, which in turn lead to higher levels of participation. This elegant, parsimonious explanation suffers when confronted with the empirical reality of the paradox discussed above. Indeed, the institutional explanation may be missing the point entirely, as it becomes possible to consider that electoral rules, party systems and increased levels of turnout owe more to unmeasurable cultural causes than institutional explanations are willing to grant.

Scholars are aware of this potential pitfall, and two explanations have been offered that are consistent with the institutional theory on the relationship between electoral rules and turnout (Blais and Dobrzynska, 1998). First, larger party systems under PR virtually guarantee that some form of coalition government will result. With key decisions one step removed from the electorate, voters will feel less efficacious and therefore less likely to expend the resources necessary to cast a ballot. Second, large party systems may confuse voters with a myriad of choices, resulting in costlier information and attenuation in the heuristic value of the partisan cue.

The problem experienced until now is an inability to directly test such hypotheses with aggregate data. Beyond the usual methodological problems associated with drawing individual-level inferences from aggregate data, information on the preferences and characteristics of individual voters from across a variety of electoral settings simply did not exist. Ideally, to answer the question *'Why does PR enhance turnout, whereas the large party systems thought to be fundamental to this relationship appear to depress turnout?'*, individual-level data are critical.

In this article, I will address this question with models of participation and efficacy that combine individual-level data from the Comparative Study of Electoral Systems (CSES) with contextual measures on the nature of the party system and coalition structure in fifteen democracies. The advent of a large-scale, consistent survey instrument administered immediately after elections in countries operating under a variety of institutional arrangements allows us to shed some light on the relationship between electoral rules, party systems and electoral participation.

## **Party Systems and Enhanced Participation**

Several theories seek to explain the interactions between individual voters and institutional rules that lead to higher levels of turnout under PR. Single-member district (SMD) elections conducted under plurality rules strictly limit choices

through an interaction of strategic behaviour by individuals and elites (Cox, 1997). Candidates have strong incentives to occupy the centre of the ideological distribution of the electorate, which can lead to a virtual indistinguishability of policy positions to the voter. Since both candidates tend to have similar views on issue positions, some voters are left with the impression that the result of the election is insignificant, as a victory by either candidate will generate similar policy results (Downs, 1957).

The tendency of plurality/SMD elections to result in two candidates also leads to wasted votes. Voters virtually assured of victory or defeat have limited incentive to pay the price of voting. Those with partisan or ideological preferences on either end of the overall distribution likewise face the decision to vote strategically or to abstain, as their policy preferences are not represented among the competing candidates.<sup>1</sup> PR reduces wasted votes by creating an institutional context that allows for (but does not demand – see Lijphart, 1990) a greater number of competing parties,<sup>2</sup> which might also enhance competitiveness. Additionally, the more candidates or parties competing for election, the greater the overall coverage of the issue space, leading to a stronger likelihood that any given individual will find a candidate that approximates her own policy preferences. Finally, the mitigation of strategic incentives and wasted votes increases the value of any given single vote, possibly leading to a greater degree of trust in the institutions of government (Amy, 1993).

Anderson and Guillory (1997) suggest that institutional design is associated with overall satisfaction with democracy. This is consistent with Lijphart (1999), who finds that consensual institutional designs are associated with higher levels of turnout and satisfaction with democracy. Consensual systems encourage or even require power-sharing across a wide base, affording political minorities the opportunity to have a political voice. Consensual systems, associated with higher levels of satisfaction, also tend to be associated with higher levels of voter participation.

PR systems that encourage multiple competitive parties also strengthen partisan attachments across the spectrum of the electorate (Karp and Banducci, 2000). Parties operating within multi-party systems should strive to distinguish themselves from one another ideologically, as incentives to coalesce around the median voter are reduced or eliminated under PR (Katz, 1980). This may also generate specific appeals to potential supporters in the electorate, which in turn engenders stronger partisan attachments. Voters are more likely to forge loyal bonds to parties that address their specific concerns rather than to broadly focused parties that seek to appeal to the median voter. As earlier findings demonstrate that strong partisans turn out at higher rates than weak partisans (Campbell *et al.*, 1960; Verba *et al.*, 1978), the sort of party systems fostered by PR rules ought to result in higher turnout in the aggregate.

Mobilization should also be higher under PR than under plurality schemes, as variation in electoral institutions leads to variation in incentives for political parties to mobilize voters (Canon, 1999; Cox, 1999), although recent evidence casts doubt on this assumption (Karp *et al.*, 2002).

One commonality of all the theories that seek to explain why PR produces higher levels of turnout is the nature of the party system created by different electoral systems. It is a conventional wisdom, partially supported by both theoretical and empirical research (Duverger, 1954; Rae, 1971; Powell, 2000), that PR systems generate more parties than plurality systems. The nature of the PR party system appears to have a central role in explaining the higher rates of turnout.

## Party Systems and Reduced Participation

Recent findings question the theory that the larger party systems typically found under PR arrangements foster increased levels of participation. Jackman (1987) and Jackman and Miller (1995) report evidence suggesting that larger party systems depress turnout, even when simultaneously accounting for increased levels of turnout associated with higher levels of proportionality. These findings are inconsistent with the expectation that larger party systems encourage higher turnout through stronger partisan attachments, greater mobilization efforts and a wider range of choices. Blais and Dobrzynska (1998) publish similar results, concluding that PR has a mixed relationship with turnout and a net effect of 3 percent higher turnout in countries with PR.

The existing literature suggests two skeletal theories that seek to understand how large party systems can serve to reduce turnout. The first deals with the higher probability of coalition governments under PR with large party systems, and the second concerns the relationship between party systems and information costs to the voter.

The apparent paradox of PR for simultaneously offering both incentives and disincentives for participation was first articulated by Downs (1957, p. 156). It may be paraphrased thus: although PR rewards voters with a 'more definite' choice of policy alternatives, resulting coalition governments where executive responsibility is decided by negotiation among elites of different parties actually affords voters a 'less definite' choice. Powell elaborates on the 'less definite' nature of coalition governments, suggesting that 'clarity of responsibility is greatest when a single, unified political party' controls government (2000, p. 52). When responsibility is muddled, as is often the case in coalition governments, ascribing blame for policy failure to any one party during an election becomes difficult, thus reducing the efficacy of a retrospective evaluation.

Likewise, prospective assessments are more difficult under a coalition environment. Powell ties the utility of a prospective evaluation at election time to the potential for a governing mandate after the election. For voters to effect control over governance through a mandate, two conditions must be met: (i) 'identifiable prospective governments' must be clear at the time of voting; and (ii) the election must result in a 'responsibly formed working majority' (2000, p. 71). In most cases, the process of coalition formation prevents either an accurate retrospective evaluation or a clear prospective choice at the time of an election.<sup>3</sup>

The interactions between voters, coalitions and participation are undoubtedly more complex. In many countries operating under PR with concomitant large party systems, coalition governments are a fact of life. However, variation exists in the

nature of coalition governments. Although the literature on cabinet formation is vast and beyond the scope of this article, several theories on cabinet formation exist, each predicting slightly different combinations of parties based on their contribution towards achieving a majority, sustaining that majority, and policy accommodation.

Several scholars suggest that parties will rationally maximize their power through cabinet formation by excluding parties that are unnecessary to achieving a parliamentary majority (for example, Riker, 1962) and has been extended to include constraints based on shared policy preferences (Axelrod, 1970; Laver and Schofield, 1990). The resulting prediction is that ideal coalitions should consist of the minimum number of ideologically compatible parties necessary to achieve a sustainable majority in parliament.

This same rationality should extend to voters. Voters should be able to recognize when the party that they have chosen is included in a minimal-winning cabinet, and when the power of their vote is weakened by the addition of extraneous minor parties to the coalition. The greater the frequency of such cabinets over time, the less likely voters are to feel efficacious about how elections measure their preferences. Thus, although elections conducted under PR tend to offer voters a 'more definite' set of options, considering that the ultimate result is often a 'less definite' government where responsibility for policy failure is difficult to ascribe to a single party and prospective assessments lack efficacy, it is not difficult to see how some scholars (Jackman, 1987; Blais and Dobrzynska, 1998) suggest that the removal of direct control over executive formation from the electorate to elites results in elections being 'less decisive'. This should lead to a deterioration of external efficacy or the sense that the government is responsive to the desires of the electorate. This reduces the potential benefits of casting a ballot, and therefore the probability of participation.

The second theory that attempts to explain why large party systems might be associated with lower levels of turnout hinges on the complexity of the choice presented to voters. Blais and Dobrzynska (1998, p. 249) suggest two counter-hypotheses regarding this issue. As discussed above, larger party systems facilitated by PR have long been assumed to be a spur to turnout through increased mobilization activities. Also, the 'more definite' choice of policy alternatives offered under PR appears to engender stronger partisan attachments in the electorate (Karp and Banducci, 2000).

However, these benefits might come at a price. Simon (1996) explains how 'task environments', or, in other words, the context in which a decision is to be made, affects the efficacy of a decision rule. Large party systems might create a burdensome task environment through the sheer number of choices on offer. Blais and Dobrzynska suggest that 'the greater the number of parties, the more complex the system, and the more difficult it can be for electors to make up their mind' (1998, pp. 248–9). With a greater number of parties competing for attention in a finite issue space, overlap in appeal is likely.

Although large party systems appear to establish stronger partisan bonds, this does not help those without a partisan attachment. In a two-party or three-party system,

those that lack a pre-existing loyalty to one of the parties can still sift through the competing appeals by relying on the partisan cue. In the US, for instance, most independent voters are able to discern that Republican candidates tend to be located to the right of Democratic candidates on various issues. However, when independent voters are faced with many competing parties, one can understand how the partisan cue begins to lose utility. In the Netherlands, where up to seven parties have a reasonable chance at being involved in coalition formation, and twenty appeared on the most recent ballot in January 2003, voters lacking pre-existing partisan attachments operate in a more difficult task environment than voters in the US or UK.

### Explicit Hypotheses

Several explicit hypotheses are derived from the general discussion above and tested with an analysis that combines individual- and contextual-level data. First, the nature of coalition composition should help explain why larger party systems appear to depress turnout, whereas the electoral arrangements that allow for such systems enhance turnout. As large party systems fostered by PR rarely result in an outright majority by any single party,<sup>4</sup> a coalition is necessary for stable governance. Although coalitions are often treated as a given in PR countries, earlier studies that speculate on the role of coalitions in reducing turnout miss an opportunity by overlooking the variance in resulting coalition governments. Powell (2000) observes the difference between a majority coalition that was negotiated before the election, where the parties run as a slate promising to work together towards their policy aims, and a coalition that is negotiated after the election. Clarity of responsibility and prospective assessments are easier to ascertain about the former. Further variation exists. As discussed above, the more often a governing coalition violates the minimum-winning-size principle, either through a government representing a minority of parliament, or one which consists of parties extraneous to achieving a majority, the ultimate result for voters is a 'less definite' choice at the executive level. The more often this occurs over time, voters might perceive a system of governance that is not responsive to their preferences as revealed in an election.

This can be tested through a comparison of two turnout models. The first is a 'base' model, specified to capture the current state of our knowledge of the contextual effects on turnout. It is important that, in this base model, a measure of the size of party systems produces a negative estimate consistent with previous studies. The second model adds a measure of coalition structure over time. The behaviour of both the party system and the coalition variable in this model is important in offering a potential explanation for the paradox of PR.

**H1:** The more often a country has been governed by coalitions in violation of the minimum-winning rule, the more the perceived benefits of voting are reduced because of the 'less definite' ultimate result of the election. In comparing two models of turnout of similar specification, the negative effect of large party systems should be reduced or eliminated in the presence of a variable that measures the prevalence of coalitions in

violation of the minimum-winning rule. At the same time, this coalition measure should produce a significant and substantive negative estimate. If these two conditions are met, the nature of the coalition system over time explains at minimum some of the negative effects of large party systems on turnout.

Coalitions in violation of the minimal-winning rule reduce participation levels by producing 'less definite' outcomes, which attenuate the perceived potential benefits of voting. All coalition formation, beyond those few that have been negotiated and presented to voters before an election, removes the voter one further step from governance. When the resulting coalition strays from an accurate representation of the preferences of the electorate as revealed by election results, voters might be left with a reduced sense of external efficacy, or the perception that the government is less responsive to the desires of the electorate. An examination of the relationship between external efficacy and coalition nature serves as an additional test for the first hypothesis.

**H2:** The more often a country has been governed by coalitions in violation of the minimal-winning rule, levels of external efficacy should be reduced.

It is reasonable to anticipate that the interaction between coalition composition and the probability of participation does not result in the same relationship for every voter. Depending on individual characteristics or preferences, voters should be affected to varying degrees. As a coalition is composed of distinct parties, partisans ought to react differently depending on how their personal sense of efficacy is impacted. Loyalists of major parties ought to be less pleased with oversized coalitions, as superfluous minor parties added beyond those necessary for a parliamentary majority attenuate the power of their vote. Likewise, minor partisans ought to be less affected, as oversized coalitions offer an increased chance of representation at the level of government.

**H3:** The probability of turnout amongst supporters of major parties is more sensitive to coalition composition than the average voter. However, the probability of turnout for partisans of minor parties should be unaffected by variance in the nature of coalitions, as these voters stand more to gain than lose with the existence of oversized governments. Adding variables that interact supporters of major and minor parties with the coalition measure can test this hypothesis.

The second theory that seeks to explain why large party systems have a negative effect on turnout suggests that the sheer complexity of larger party systems increases information costs, resulting in a more difficult task environment, as voters face greater difficulty in sifting through the different (and at times quite similar) appeals. At once, the transaction costs of voting are enhanced through more-expensive information, and the utility of the partisan cue is degraded as a decision heuristic. If there is evidence to suggest that large party systems result in higher information costs to the voter, several existing explanations for higher levels of turnout in PR systems are undermined. Large party systems fostered under PR are hypothesized as creating an environment where voting is easier, not more

difficult, which in turn helps explain the higher levels of participation that PR democracies have historically enjoyed. The fourth hypothesis considers this question once the presumed negative influence of coalition structure is taken into account.

As with the first hypothesis, a base model serves as a point of departure. In the second model, a coalition term is added to test for the independent effects of coalitions in violation of the minimal-winning rule. One way to examine the relationship between the task environment and information costs is to consider the residual effect of the party system variable in the presence of the measure that estimates the effects of coalition structure. For example, if some significant, negative effect of party systems remains once the coalition measure has been introduced, then it is clear that coalition structure does not explain the totality of the previously reported relationship between party systems and turnout. This lends support to the notion that large party systems create a complex environment for decision-making, thus burdening voters with increased information costs and reducing the probability of turnout.

However, if the party system estimate is insignificant in the face of the coalition measure, then the previously observed effects of large party systems on turnout is likely a direct function of coalition formation, resulting in no support for the complicated task environment hypothesis. In this scenario, any detrimental effects due to increased information costs are balanced by positive factors that are thought to result from large party systems. Finally, if the party system measure becomes significantly positive once coalition nature has been controlled, then there is support for the hypothesis that, on balance, larger party systems encourage turnout, with the benefits offsetting any negative effect introduced by higher costs of information.

**H4:** If, in the presence of a coalition variable, larger party systems are still associated with a lower probability of participation, then support exists for the notion that increased information costs associated with these systems accounts for a portion of reduced turnout. If the party system measure is insignificant in the face of a coalition variable, then the net result of the party system can be considered a wash, with the advantages balancing the disadvantages. If the residual effect is positive, support exists that the advantages of larger party systems outweigh increased costs of information.

A more direct test of the association between larger party systems and increased costs of information is desirable. If larger party systems lead to increased costs of information, resulting in lower turnout, the effect on voters should vary with individual characteristics. Potential voters who have a strong partisan attachment should be unaffected by the number of parties. These loyal voters know how to decide in advance of the election and are well positioned to overcome increased information costs associated with a sprawling ballot. However, those with weak or no pre-existing attachments to any of the parties are left to sift through a confusing jumble of competing parties and manifestos. Lacking the standing decision that a strong attachment offers, these voters are the most likely to be affected by higher information costs and abstain.

**H5:** If larger party systems are associated with more difficult decision environments, then their effect should be more pronounced among weak partisans than among strong partisans. This can be tested through a term that interacts the individual's strength of partisan attachment with the size of the relevant party system.

Education is often used as a measure of competence in dealing with complexity and allows us a final test of the information costs hypothesis. As those with more education are in a better position to deal with complex task environments, such potential voters should be less affected by increased information costs associated with larger party systems. If no difference is found between the highly educated and the less educated, then the advantages of larger party systems can be construed as overcoming the disadvantages. On the other hand, if the combination of a weaker education and larger party systems appears to result in lower turnout, then the increased burdens of larger party systems must be considered.

**H6:** If higher information costs believed to accompany large party systems serve to reduce turnout, then the negative effects of large party systems should be more pronounced among the less educated.

## Data, Measures and Methods

The reliance on aggregate data to consider research questions on the link between institutions and turnout in cross-national settings has constrained the ability to address hypotheses like those outlined above. Aggregate data are useful in determining the *what*, but they are ill equipped to explore questions of *why*. Individual-level data are the best source to answer questions concerning the latter, but design for such a survey is demanding. Not only is it necessary to include appropriate and consistent measures at the individual level, but the sample itself needs to be sufficiently large so that relationships between the contextual and individual level can be tested with adequate statistical power.

The CSES attempts to overcome the limitations of earlier aggregate studies through the implementation of a cross-national survey designed to address the effect of institutional variation on the mass electorate. Local teams implement a common instrument at the time of a national election. Individual-level data from each country are based on a random probability sample of eligible voters.<sup>5</sup> The battery of questions asked in each country is the same, allowing for a valid pooling of measures at both individual and contextual levels. My analysis is limited to fifteen of the countries included in the CSES that have a history of democratic elections going back over one generation.<sup>6</sup> Several contextual measures, relevant to the democracy in which a given respondent resides are added to the CSES dataset to test the hypotheses discussed above. The fifteen democracies included in this study, the sample size from individual-level CSES data and the values for several contextual measures can be found in Table 1.<sup>7</sup>

The dependent variable in the first four models is self-reported turnout, coded dichotomously, as these models estimate various individual and contextual influences on participation. The remaining two models estimate factors that

Table 1: Contextual Measures for Fifteen Democracies

		Effective number of parties	Dispropor- tionality index	Coalitions not minimal winning (%)	Federalism	Electoral system	Year of study	N in survey
↑	Australia	2.19	10.15	14.7	Yes	1	1996	1,798
	Belgium	5.49	3.09	71.2	Yes	3	1999	2,179
	Canada	2.35	12.16	4.8	Yes	0	1997	3,949
	Denmark	5.11	1.78	76.1	No	3	1998	2,001
	Germany	2.84	1.48	53.8	Yes	3	1998	2,019
	Israel	4.16	3.48	92.1	No	3	1996	1,091
	Japan	4.07	5.28	59.6	No	2	1996	1,327
	Netherlands	4.68	1.29	62.7	No	3	1998	2,101
	New Zealand	3.45	2.99	0.9	No	3	1996	4,080
	Norway	3.61	4.70	54.9	No	3	1997	2,055
	Spain	2.76	8.15	27.0	Yes	3	1996	2,420
	Sweden	3.52	1.77	58.6	No	3	1998	1,157
	Switzerland	5.57	2.98	100	Yes	3	1999	2,048
	USA	2.41	15.60	19.9	Yes	0	1996	1,534
	↓	Great Britain	2.20	14.66	6.7	No	0	1997

Source for effective number of parties, disproportionality index and coalition measure: Lijphart (1999, pp. 312–13). Note that the coalition measure presented here is the inverse of that available in Lijphart (the measure reported there is subtracted from 100 to derive that reported above).

The nuance of the electoral system is captured by the disproportionality index, which not only accounts for the rough categories of electoral system (plurality, non-corrective mixed, corrective mixed, full PR) but also other aspects of the system that affect proportionality, such as district magnitude and minimum thresholds for representation.

Electoral system is coded as follows: 3 for full PR and corrective mixed systems; 2 for non-corrective mixed systems; 1 for majoritarian systems; and 0 for plurality systems.

The reported sample size (N) does not account for data loss due to missing data in the models. The total sample size reported here is 32,690, whereas the models report 25,492. The sample size reported above is also unadjusted; the CSES global weight variable is used to correct for the variance in sample size across the fifteen countries included in the analysis.

Belgian data limited to Flanders. Random probability samples were conducted both Flanders and Wallonia for the CSES; Walloon data are currently unavailable.

New Zealand effective number of parties and disproportionality index is based on the mixed-member proportional system installed in 1996. The coalition measure is based on history under the former Westminster plurality system. Neither dropping New Zealand from the analysis nor controlling for it with a dummy variable significantly affects the substantive findings of the models reported in this analysis (although some variation in the effect of individual variables exists, and the pseudo  $R^2$  of the logistic regression models does increase with the inclusion of the dummy variable).

contribute towards a measure of external efficacy, based on hypotheses regarding the effect of oversized coalitions on efficacy. The efficacy variable used as the dependent variable in these models attempts to measure individual attitudes concerning whether or not it makes a difference who is in power. The five-point ordinal coding of the original CSES variable has been reversed here, so that the higher the value, the more an individual respondent believes that it matters who is holding power.<sup>8</sup>

Reliance on self-reported turnout as a dependent variable is a necessary choice in this study, but it is not without potential limitations, as it is typical to find that the proportion of respondents who report voting exceeds the estimates of actual voter turnout. An alternative is to rely on validated rather than reported turnout. Validated turnout matches the behaviour reported by the respondent with actual voting records. However, validated data have their own weaknesses (Presser *et al.*, 1990) and are not available with CSES data.<sup>9</sup>

Various examinations of validated data find that the source of the discrepancy is with those who have not voted claiming to have participated.<sup>10</sup> Debate surrounds the potential for systematic bias.<sup>11</sup> Bias that has been reported is found to generally affect those who are predisposed to vote in the first place (Silver *et al.*, 1986). If systematic bias does exist at the individual level, positive estimates of education and partisanship would be inflated. This actually presents a more conservative test of the hypotheses outlined above than estimates generated with validated data. One expectation is that supporters of major parties are less likely to participate in the presence of coalitions in violation of the minimal-winning rule. As these respondents are more likely to over-report voting than the average voter, the clear negative relationship suggested by the hypotheses should be harder to achieve in the face of any bias introduced by over-reporting. This is also true of the information costs hypotheses, as over-reporting should introduce bias that overestimates the positive effect of education and strong partisanship on turnout.<sup>12</sup>

Finally, the literature on over-reporting is largely silent in terms of institutional effects, which are central to my argument. The four models that estimate turnout, discussed below, are also estimated (though not reported) using an adjusted dependent variable that accounts for variance in over-reporting by country. The fundamental findings discussed below remain intact in the adjusted models.<sup>13</sup>

Both contextual and individual explanatory variables are included in the models. The former are added to the CSES data as constants for the respondents in each of the fifteen countries, and they are discussed first. Many variants of electoral systems exist, a proper discussion of which warrants a book-length treatment. A simple four-point ordinal scale is used to rank electoral systems in terms of their presumed impact on participation. A value of 0 is assigned to countries with plurality systems, 1 to majoritarian systems (the lone example in this study being Australia), 2 to mixed systems that do not correct for proportionality deficits, and 3 to both corrective mixed systems (such as Germany, and also referred to as mixed-member proportional in the case of New Zealand) and pure PR systems.

The implementation of PR is highly nuanced, determined by features including, but not limited to, district magnitude, legal electoral threshold, the divisor rule employed and, in the cases of mixed systems (where geographic districts underlie at large constituencies elected under some form of PR), whether or not the PR component is corrective or non-corrective. Because of variation in the implementation of PR schemes, it is not surprising that many authors (for example, Franklin, 1987; Blais and Dobrzynska, 1998; Lijphart, 1999) have found that measures of disproportionality also matter in predicting cross-national variation of turnout, as the true power of PR can scarcely be realized when district magnitudes are limited to three. Since the ordinal measure of electoral system discussed above fails to account for the nuance in producing proportional results, a measure of proportionality is also included in the analysis, which covers the period between 1971 and 1996. In measuring disproportionality, I follow the suggestion of Lijphart (1999, p. 158) in adopting Gallagher's (1991) measure.<sup>14</sup>

Central to this article is an examination of how party systems and electoral systems interact in explaining turnout. To measure the number of parties, the Laasko and

Taagepera (1979) formula for determining the 'effective number of parties' based on seat share in parliament is employed.<sup>15</sup>

There are several methods of measuring cabinet formation. In placing countries on a majoritarian–consensual continuum, Lijphart (1999) averages the occurrence over a given period of time of both single-party cabinets and minimal-winning cabinets. Minimal-winning cabinets exist when parties join a coalition only to the point where a minimal parliamentary majority has been achieved. The coalition measure included in the models discussed below is modified from Lijphart's measure of coalition formation over the period 1971–1996 by subtracting his value from 100. The resulting values (reported in Table 1) represent the percentage of time from 1971 to 1996 inclusive that a cabinet has violated the minimal-winning coalition rule.<sup>16</sup>

Two additional contextual measures are included in the analysis. Australia, Belgium and Switzerland all have some implementation of compulsory voting. However, it is not strictly enforced in Belgium, and in Switzerland it applies to only one canton. As Australia does nominally enforce this rule, this should influence turnout by decreasing the cost of participation (through increasing the cost in tangible monetary terms if one were to abstain). The measure 'compulsory' accounts for the discrete impact of Australia. Federalism is included as a control variable, as it is hypothesized that federal systems, to paraphrase Jackman (1987), reduce the importance of any single election. Powell argues that federal systems reduce the perceived accountability of a government, thus making a retrospective evaluation more difficult and also limiting the importance of any single election (2000, pp. 61–2). Federal structures limit the effect of the central government by distributing some powers to state, province or other regional entities, which limits the importance of elections to the central government, and as such should be a drag on participation rates. Federalism is coded dichotomous (1 if a federal state, 0 if unitary).

Individual-level measures include two measures of external efficacy, strength of partisan attachment, whether one is a partisan of a major or minor party, whether or not one has had contact with a member of parliament or congress, gender, income and education. Each are included in the analysis either because earlier studies have provided evidence as to their necessity as a control variable in predicting turnout or because they are important to testing the hypotheses outlined above.

The CSES measures external efficacy with two questions – one that asks whether it matters who is in power, and another that asks whether or not it matters for whom one votes. Both are coded on five-point ordinal scales, with higher values representing a greater sense of efficacy. Partisanship is measured through a series of questions that assigns a value of affectation to political parties relevant to the respondent's country. The highest-rated party in this series is considered to be that party that the respondent feels closest to; the intensity of this affective relationship is measured by the absolute value on the ten-point scale for the highest-rated party. When included in the models, the strength of partisanship measure is squared, as the distribution of this variable has a severe left tail. In distinguishing between major and minor parties, I follow the lead of Karp and Banducci (2000). One is

coded as a partisan of a major party if that party is typically one of the two largest in the electoral arena. Among the fifteen countries included in this study, 48 percent of respondents are coded as attached to a major party, 21.9 percent to a minor party, and the remaining possessing no clear preference. Both the minor and major party measures are coded dichotomous.

Income is relative to the country in which the respondent resides and is measured with a five-point ordinal scale based on quintiles. Contact is a dichotomous measure that indicates whether or not the respondent has had contact (either initiated by the respondent or official) with a member of parliament.

Conventional logistic regression models are used to test hypotheses concerning electoral participation, and ordinary least squares (OLS) regression is used for models that estimate influences on external efficacy.

## Analysis

The hypotheses are tested with four logistic regression (Table 2) and two OLS regression (Table 3) models. Model 1 establishes a baseline of contextual and individual-level influences on electoral participation and behaves largely as previous literature predicts. The only departure is that the electoral system measure does not produce a significant estimate. This is not surprising, as the nuance of an electoral system is better measured by the disproportionality variable, which is significant and predictably negative.<sup>17</sup> Federal systems tend to have lower levels of turnout than unitary systems, consistent with the hypothesis that, as the significance of any given election decreases, turnout will likewise decrease. Larger party systems appear to depress turnout, consistent with previous findings. This gets at the heart of the paradox, as the benefits of PR are supposedly implemented by larger party systems.

At the individual level, both measures of external efficacy positively influence turnout, as does strength of partisan attachment, whether or not one has had contact with a member of parliament, and higher levels of education and income. These are neither interesting nor innovative results, as such individual attitudes and attributes have long been held as predictors of participation. Partisans of major parties turn out at a higher rate than minor partisans or the reference category (those with no clear preference). Females appear to vote at a lower rate than males among these fifteen democracies, although the standard error for this estimate is quite high, and with the inclusion of additional measures this variable is insignificant (as seen in models 2–4).

Working from the baseline established in the first model, model 2 tests the first hypothesis, which predicts that the more often that coalitions have violated the minimal-winning rule, the lower turnout will be. It is specified exactly as the first model, but with the addition of the coalition measure. The estimate for the coalition measure supports the second hypothesis, which predicts that the greater the percentage of time between 1971 and 1996 that a country has been governed by coalitions that include parties superfluous to achieving a parliamentary majority, the lower resulting turnout levels are. This confirms one long-held theory about the effect of party systems that has only been tested indirectly, by

Table 2: Reported Turnout in Fifteen Democracies (Logistic Regression)

Variables	Model 1: Base model	Model 2: Adds coalition measure	Model 3: Interacts partisanship with coalition	Model 4: Tests for information costs
Electoral system	-0.04 (0.05)	-0.07 (0.05)	-0.07 (0.05)	-0.08 (0.05)
Federalism	-0.18*** (0.05)	-0.17*** (0.05)	-0.18*** (0.05)	-0.18*** (0.05)
Disproportionality index	-0.14*** (0.02)	-0.19*** (0.02)	-0.19*** (0.02)	-0.19*** (0.02)
Compulsory voting	2.45*** (0.25)	2.37*** (0.25)	2.40*** (0.25)	2.39*** (0.25)
Effective number of parties	-0.39*** (0.03)	0.16*** (0.05)	0.16*** (0.05)	0.17*** (0.05)
Coalitions beyond minimal- winning rule (%; 1971–1996)	–	-0.03*** (0.002)	-0.03*** (0.002)	-0.03*** (0.002)
It matters who holds power	0.05* (0.019)	0.04 (0.02)	0.03 (0.02)	0.03 (0.02)
Voting matters	0.19*** (0.02)	0.21*** (0.02)	0.21*** (0.02)	0.21*** (0.02)
Partisan strength (squared)	0.02*** (0.001)	0.02*** (0.001)	0.02*** (0.001)	0.02*** (0.002)
Partisan of major party	0.20*** (0.06)	0.24*** (0.06)	0.42*** (0.10)	0.40*** (0.11)
Partisan of minor party	0.04 (0.07)	-0.004 (0.07)	0.15 (0.13)	0.14 (0.13)
Contacted by MP	0.60*** (0.09)	0.64*** (0.09)	0.65*** (0.09)	0.65*** (0.09)
Female	-0.10* (0.05)	-0.09 (0.05)	-0.09 (0.05)	-0.08 (0.05)
Income (quintiles relative to country)	0.10*** (0.02)	0.10*** (0.02)	0.10*** (0.02)	0.10*** (0.02)
Education	0.16*** (0.02)	0.15*** (0.02)	0.15*** (0.02)	0.13*** (0.02)
Major partisan + coalition	–	–	-0.0033* (0.0017)	-0.0034* (0.0017)
Minor partisan + coalition	–	–	-0.0028 (0.002)	-0.0029 (0.002)
Strong partisanship + large party systems	–	–	–	-0.02 (0.02)
Weak partisanship + large party systems	–	–	–	-0.02 (0.02)
No college degree + large party systems	–	–	–	-0.05 (0.027)
Intercept	1.35*** (0.28)	1.16*** (0.27)	1.06*** (0.28)	1.21*** (0.30)
Pseudo R <sup>2</sup>	0.17	0.20	0.20	0.20
N	25,492	25,492	25,492	25,492
Predicted (%)	88.1	88.3	88.4	88.4

Notes: Dependent variable in all models is reported turnout, estimated with logistic regression.

Standard errors for the estimates are in parentheses.

\*\*\*  $P < 0.001$ ; \*\*  $P < 0.01$ ; \*  $P < 0.05$  (two-tailed t-tests).

**Table 3: Determinants of External Efficacy (Ordinary Least Squares)**

<i>Variables</i>	<i>Model 5: Base model</i>	<i>Model 6: Adds partisans of major parties interacted with coalition measure</i>
Electoral system	0.23*** (0.02)	0.23*** (0.02)
Federalism	-0.08*** (0.02)	-0.08*** (0.02)
Disproportionality index	0.04*** (0.004)	0.04*** (0.01)
Effective number of parties	0.03* (0.01)	0.03* (0.01)
Coalitions beyond minimal-winning rule (% , 1971–1996)	-0.0009* (0.0001)	-0.00009 (0.0001)
Voting matters	0.37*** (0.01)	0.37*** (0.01)
Partisan strength (squared)	0.007*** (0.001)	0.007*** (0.001)
Partisan of major party	0.08*** (0.02)	0.17*** (0.03)
Partisan of minor party	-0.06** (0.02)	-0.06** (0.02)
Contacted by MP	0.16*** (0.02)	0.16*** (0.02)
Female	0.04* (0.015)	0.03* (0.015)
Income (quintiles relative to country)	0.01 (0.006)	0.01 (0.006)
Education	0.03*** (0.005)	0.03*** (0.005)
Major partisan + coalition interaction	–	-0.002*** (0.0001)
Intercept	1.00*** (0.08)	1.16*** (0.27)
$R^2$ (adjusted)	0.21	0.21
$F$	438***	408***
$N$	21,398	21,398

*Notes: Dependent variable in all models is a five-point ordinal scale assessing whether or not it matters who is in power, estimated with ordinary least squares linear regression.*

*Standard errors for the estimates are in parentheses.*

*\*\*\*  $P < 0.001$ ; \*\*  $P < 0.01$ ; \*  $P < 0.05$  (two-tailed t-tests).*

aggregate data, via measures of party systems rather than exploiting the variation of coalitions.

Jumping from the first to the fourth hypothesis, an inspection of the measure of the effective number of parties indicates that once the historic nature of coalitions is controlled for, the resulting party estimate is positive. This indicates that larger party systems have a positive rather than negative effect on turnout when the effects of coalitions are controlled, which lends further support to the hypothesis that it is coalition formation specifically, and not the size of party systems generally, that causes the party system measure in previous studies to appear to reduce turnout.

The third hypothesis anticipates that voters are affected by contextual factors to varying degrees based on individual attitudes and characteristics. Partisans of large parties stand to lose the most when confronted with a coalition that includes minor parties superfluous to achieving a minimal parliamentary majority, as it is the power of their party, and by extension their ballot, that is reduced. This hypothesis is tested in model 3 through the inclusion of measures that attempt to capture the interaction of coalition formation at the contextual level and party attachments at the individual level. The resulting estimate supports the hypothesis. Supporters of major parties are less likely to turn out in countries more often governed by coalitions that violate the minimal-winning rule, whereas partisans of minor parties appear unaffected by variation in this relationship.

The alternative theory that posits the negative effects of large party systems as a function of the resulting complexity of the decision environment is tested in model 4. If large party systems make decisions more difficult, the fifth hypothesis predicts that this should be more pronounced among those with weaker partisan attachments than among those with stronger partisan attachments. Those with stronger partisan attachments are less likely to be affected by complex task environments, as they possess a pre-existing preference that allows them to make better sense of partisan cues. Strong partisans are defined as those in roughly the top third of the partisan strength measure; weak partisans are those roughly in the bottom third. This is tested through the inclusion of two interactive measures to model 3, the results of which are reported as model 4. The estimates of these interactions do not support the hypothesis, as neither strong nor weak partisans are significantly influenced by the size of the party system, a result that does not support the theory that voters find large party systems overly complex.

Strength of partisanship is only one manner of measuring the ability to deal with complex task environments. Education is another. Model 4 also includes a measure that tests for the interaction of education and party system by interacting respondents without a college degree with the size of the party system. Again, no explicit support for the hypothesis is found. However, we cannot reject the null out of hand, as a priori theory exists predicting that this variable will assume a particular direction (negative) some might argue that a significance level of 0.10 is more appropriate. In that case, this estimate would be reported as significant ( $P = 0.057$ ).<sup>18</sup>

The link between the effect of oversized coalitions and participation is external efficacy. The second hypothesis predicts that the more often oversized coalitions govern, the more the levels of external efficacy ought to be reduced. Table 3 reports two OLS models that predict variance in external efficacy (as measured by a five-point scale capturing the response to the question 'Does it matter who holds power?') that test that hypothesis. Model 5 suggests the frequency that a country is governed by oversized coalitions appears to have an effect on this attitude, as, on average, respondents in these contexts report that it matters less who is in power. As with predicting turnout, this effect varies among respondents. Model 6 tests for an interaction between partisans of large parties and the frequency of oversized coalitions; this interaction appears to explain the negative impact of oversized coalitions on external efficacy as the base term loses significance, whereas the

interactive term is significant and in the predicted direction. In short, the entire negative effect of coalitions in violation of the minimal-winning rule on external efficacy is attributable to partisans of major parties. Supporters of major parties frequently governed by coalitions that include parties superfluous to achieving a majority appear to be resigned to the fate that the power of their vote will likely be attenuated during cabinet formation, whereas the existence of oversized coalitions has no observable effect on partisans of minor parties or those without a partisan affiliation.

## Conclusion

Previous studies that examine the relationship between institutional arrangements and turnout are largely based on aggregate data. Such data are well suited to describe PR as related to increases in turnout, yet they also offer the paradoxical finding that large party systems reduce turnout. The findings reported here have an advantage over analyses based on aggregate data, as inferences attributed to individual attitudes or characteristics in the latter are indirect. This study directly controls for standard attitudinal and demographic predictors of turnout while testing for contextual influences, and simultaneously examines interactions between individual characteristics and contextual conditions. With individual-level data, we are better positioned to sort out why large party systems appear to reduce turnout and whether or not this effect is symmetrical across the potential electorate.

Exploiting the advantages offered with individual-level data, my goals were to consider the two speculative explanations for the apparent paradox of PR. The first is an examination of the coalition hypothesis. This analysis suggests that most of the negative impact of large party systems on turnout is directly related to the nature of coalition governments that they produce. The relationship between coalition governance and participation varies in its effect on voters within countries. When extraneous parties are added to coalitions beyond those necessary for a parliamentary majority, it is supporters of major parties who stand to lose influence. Both electoral participation and external efficacy are lower on average when major party supporters find themselves governed by oversized coalitions. Those with no clear partisan preference, and those supporting minor parties, appear to be unaffected by the nature of coalition government.

My second goal was to examine whether or not large party systems result in a task environment complicated enough to depress turnout through higher information costs. The results here are mixed, but on balance tend to reject the notion that larger party systems are a burden to arriving at a decision. When the composition of coalitions is controlled in a model of participation (model 2), the residual effect of party systems is positive. This implies that, overall, larger party systems help spur participation rather than hinder it through complicated task environments. Furthermore, in interactions with the size of party systems, there is no observed difference between strong and weak partisans in rates of participation. If large party systems increase information costs, strong partisans should participate at a higher rate, but this does not appear to be the case. However, we cannot reject conclusively the notion that information burdens might have some explanatory power,

as those who do not hold a university degree do appear to participate at a lower rate when confronted with larger party systems, although the support here is statistically tenuous at the 0.10 level.

Two important questions remain unanswered. First, what is the behavioural source of the higher levels of turnout observed in PR systems? Evidence presented here suggests that larger party systems are associated with higher levels of turnout once the nature of coalition governance is accounted for. Many scholars have speculated that mobilization is higher in PR systems – although with recent findings challenging this argument (Karp *et al.*, 2002), this mechanism might not be as clear as we have assumed. More promising might be the better coverage of the available ideological spectrum (or issue space) afforded by larger party systems. Powell notes that ‘election choices are constrained and shaped by the alternatives offered by the party system’ (2000, p. 161); the larger party systems typical under PR have more to offer and logically ought to cover more ideological ground. A superior coverage of preferences might result in stronger party–voter linkages (Karp and Banducci, 2000). It is more satisfying to make a positive choice in an election (to vote *for* something) than a negative choice (to vote *against* something else), and this satisfaction engenders stronger bonds of loyalty, which in turn enhances turnout.

The second unanswered question concerns the complexity of coalition formation. This analysis relies on a fairly basic theory of coalition building – minimal winning. Alternatives exist, and it might be fruitful to examine how voters respond to oversized coalitions based on ideological compatibility when compared to oversized coalitions based on the expedience of forming a stable majority. If the perceived benefits of ideological connectedness outweigh the actual costs of reduced power in government, then turnout rates should not be affected by oversized coalitions that are ideologically compatible. Do voters perceive a loss of benefits when coalition negotiations are long and drawn out (as is typical in the Netherlands and Austria), regardless of the result? Are oversized coalitions immunized against the negative impact on participation if they are negotiated and presented to voters before an election, as such governments will offer voters an easier prospective choice at that election, and an easier retrospective evaluation in the following election? The sheer variance in coalition formation creates room for future investigation.

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### Notes

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1 Black, 1978; Cain, 1978; Bowler and Lanoue, 1992; Niemi *et al.*, 1992; Cox 1997.

2 Duverger, 1954; Rae, 1971; Cox, 1997; Lijphart, 1999.

3 In his study of over 150 elections in twenty democracies, Powell finds that ‘only a fairly small number of elections offer voters undiminished governmental responsibility for policy’ (2000, p. 67) and that

'about half the elections ... failed to meet the two minimal criteria' (p. 79) allowing for a clear prospective choice at the time of voting.

- 4 Powell only identifies five such elections under PR among the 150 in his study (2000, p. 71).
- 5 With the exception of New Zealand and Australia, where the sample is drawn from registered voters. As registration in both countries is mandatory (whether or not one chooses to vote), the practical implications of the differently drawn samples should be negligible.
- 6 This is primarily to ensure that contextual measures, many of which are averaged, are drawn from a large period of time. Although it is possible to include several of the recent democracies of Eastern Europe, coalition and disproportionality measures would only be drawn from two or three specific governments.
- 7 The  $N$  reported in Table 1 is the valid  $N$  for the entire sample; it does not take into account data loss in the models through missing values. Also note that, although CSES data are predicated on random probability samples of each constituent country, the  $N$  of these samples vary as illustrated in the table; to correct for this, the data are weighted by the CSES global weight variable in the analysis.
- 8 The CSES variable used is 53 and is worded as 'Some people say it makes a difference who is in power. Others say that it doesn't make a difference who is in power'. Respondents are requested to choose a value from one to five that best represents their attitude.
- 9 Three of the countries included in this study currently validate their own national election studies (Norway, Sweden and the UK; the American national election study validated eight studies, but the most recent is 1990). As the CSES is a module attached to the standard national election studies, these data are available. However, this would not allow for enough variation at the contextual level to generate any meaningful results.
- 10 Traugott and Katosh, 1979; Silver *et al.*, 1986; Swaddle and Heath, 1989; Granberg and Holmberg, 1991; Karp and Banducci, 1999.
- 11 Katosh and Traugott, 1981; Swaddle and Heath, 1989; Brady *et al.*, 1995; Blais, 2000.
- 12 If larger party systems placed an information burden on voters, one would expect to see a difference between strong partisans and others and a difference between the highly educated and the less educated. Bias in the data towards enhancing the effects of these attributes would make these differences more obvious, and yet they do not appear in the findings reported below.
- 13 The dependent variable is adjusted by comparing the reported turnout of each country included in the CSES with official turnout. The official turnout is divided by reported turnout to produce a probability that any given respondent in the CSES has over-reported. A discrete modifier is calculated for each country in an attempt to control for any institutional or contextual effects on over-reporting, which is not addressed in the current literature. A random sub-sample of cases is selected for each country from the pool of cases that reported as voting, based on this modifier. For example, in Germany the reported turnout in the CSES is 93.1 percent, whereas the official turnout for that election was 82.2 percent. The modifier is 0.88, meaning that, all else assumed equal, the probability that reported behaviour matches actual behaviour for any respondent is 0.88. In this adjusted dependent variable, about 88 percent of the cases reported as having voted are randomly selected out and coded in the adjusted variable as having voted, and the remaining 12 percent of cases are added to the pool of non-voters. As each country has a unique modifier, this adjustment is made for each country in turn.

The models that use this adjusted dependent variable do not vary appreciably from the models reported in Table 2. For example, the nature of coalitions formed over time still explains about 80 percent of the negative effect of large party systems. All the individual-level variables remain significant and in the same directions as reported in Table 2, but education and income do show a marked decline in substantive effect, which is consistent with the findings of the over-reporting literature. Two measures do behave differently and deserve comment. For example, the electoral system measure is reported as significant and positive, whereas in the models reported in Table 2 this variable is insignificant. This does not alter my basic findings. However, in the adjusted model 2, the size of the party system measure is negative and significant even in the presence of the coalition measure, although, as discussed above, the substantive estimate of the party system sheds about 80 percent of its explanatory value when the nature of the coalition system is accounted for.

Extreme caution ought to be used in interpreting these findings. The random selection of voters for each country does not take into account individual characteristics and attitudes, upon which the literature on over-reporting places an emphasis, nor does it account for the possibility of sample bias. These models are estimated merely to provide evidence that my basic findings do not suffer from a reliance on self-reported turnout.

- 14 Gallagher weights the deviations by their electoral strength, thus allowing for parties with large followings a greater role in determining overall disproportionality. The formula for calculating disproportionality is  $D = \text{sqrt}(0.5(v_1 - s_1)^2)$ , where  $v_1$  is the percentage of the popular vote that a party

received, and  $s_i$  is the percentage of the seats that those votes create. I have utilized data available in Lijphart (1999) for this measure, representing the time period 1971–1996.

15 This is calculated as

$$N = \frac{1}{\sum s_i^2}$$

where  $s_i$  is the proportion of seats by the  $i$ th party. The benefit of using this measure as opposed to a simple sum of the competing parties available is that the relative electoral strength of the parties is taken into account here. Again, the source of data for this measure is Lijphart (1999).

An alternative to calculating the effective number of parties based on seats in parliament is doing so based on vote share in the election. A disadvantage of the former measure is that it might conflate the effective number of parties with the electoral system employed. As the chosen measure might pose a problem, a replication of model 2 is estimated (not reported here) that replaces the effective number of parties based on seats with that based on votes (which lacks data on Israel, but includes the other fourteen countries in this analysis). The results are nearly an exact replication; in the model estimated with the effective number of parties based on votes instead of seats, the coalition estimate is slightly stronger ( $-0.351$  vs  $-0.296$ ), the effect of the party system on turnout is slightly stronger ( $+0.183$  vs  $+0.161$ ) and the negative effect of federalism becomes statistically insignificant. The use of either measure produces similar results.

- 16 A reliance on the minimal-winning rule might be unsatisfactory to many scholars, as it ignores coalition structures based on ideological closeness or policy compatibility. For example, Axelrod (1970) suggests that parties will conform to the minimal-winning rule only insofar as their coalition partners are connected from a policy or ideological perspective. Strom (1990) points out that there are disincentives, as well as incentives, to cabinet entry for parties. In considering the various theories of cabinet formation, Lijphart concludes that policy-viable and minimal-connected theories do not yield satisfactory predictions, whereas minimal range results in predictions similar to minimal winning – and therefore he relies on a measure of minimal-winning cabinets (1999, p. 96). However complex coalition theory might be, I make a basic argument predicated on a basic assumption – that voters and parties seek to maximize power. Since the effect of coalition structure on individual behaviour has not been undertaken in a study of turnout, it is better to start with a simple understanding of coalition formation, so long as we recognize the trade-offs involved in terms of measurement validity.
- 17 Consistent with previous findings, the four-point measure of electoral rules is significant in the expected direction when the disproportionality measure is removed from model 1. Although the full model without the disproportionality index is not reported here, in its absence the electoral system variable is both significant and substantive (with an estimate of 0.36 and standard error of 0.02).
- 18 When theory exists that predicts that an estimate will assume a specific sign (positive or negative), it is appropriate to employ a one-tailed  $t$ -test for significance rather than a two-tailed  $t$ -test. To convert the  $P$ -value calculated by a two-tailed test to that which would result from a one-tailed test, divide by two. Alternatively, one can set the threshold for null rejection at 0.10. I discuss this only in terms of caution, considering that all the remaining evidence reported here suggests that large party systems do not create an undue burden on the voter.

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