Government Formation in Parliamentary Democracies

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Research on government formation in parliamentary democracies is replete with theoretical arguments about why some coalitions form while others do not. Unfortunately, this theoretical richness has not led to the development of an empirical tradition that allows scholars to evaluate the relative importance of competing theories. We resolve this problem by applying an empirical framework that is appropriate for modeling coalition choice to evaluate several leading explanations of government formation. Our approach allows us to make conclusions about the relative importance of traditional variables relating to size and ideology and to assess the impact of recent new-institutionalist theories on our ability to explain and predict government formation.

Which parties get into government in parliamentary democracies? This question has long attracted the attention of scholars interested in the relationship between electoral outcomes and the practice of parliamentary government, and finding the answer is, "when all is said and done, simply one of the most important substantive projects in political science" (Laver and Schofield 1990, 89). For this reason, students of coalition politics, including game theorists, country experts, and contributors from several other subfields, have made the study of government formation one of the most theoretically active areas of research in the discipline.

Unfortunately, this impressive theoretical productivity has not led to systematic progress in the explanation and prediction of real-world governments. Most scholars have employed rather limited empirical designs—such as detailed accounts of coalition bargaining across a number of countries (Luebbert 1986; de Swaan 1973), uncontrolled comparisons of large samples of cabinets (Laver and Schofield 1990), or analyses of particularly prominent cases (Strøm 1994)—to evaluate ever more complicated, and often quite different, theories of government formation. Researchers have yet to subject the various competing hypotheses in this literature to an appropriate multivariate statistical analysis, although this is exactly the type of procedure we must use to choose among them.

We do not suggest that other scholars have been unaware of the empirical shortcomings in this literature. Instead, we believe that the hesitation to attempt multivariate statistical work has come from limitations (only recently overcome) in the set of methodological tools available to most political scientists. Specifically, although most theorists have formulated the basic problem as the selection of a single coalition from the set of all possible coalitions, none of the commonly used statistical models is able

to accommodate a multichotomous dependent variable of this kind. A close reading of those studies in which researchers have attempted to force the problem into the standard frameworks shows that their results are largely dependent on a number of arbitrary data manipulations (Franklin and Mackie 1984; Browne 1970).

In this study, we attempt to bridge the gap between theoretical and empirical research on government formation. We analyze data on over thirty thousand potential governments drawn from 220 coalition bargaining situations in fourteen post-war democracies in a multivariate statistical model that includes the operationalization of most of the major theories of government formation.[1] Unlike previous researchers who have relied on a linear regression approach, we employ a statistical specification—the conditional logit model—that is explicitly designed to deal with the multichotomous nature of the problem.

In the next section, we review most of the important studies of government formation from the last several decades. We draw from them three sets of hypotheses reflecting different theoretical approaches to the subject. Following this review, we use the conditional logit model to test these hypotheses and to produce a set of predictions of government composition that dramatically improve upon previous attempts.

Theories of Government Formation

Any selection of hypotheses from such a theoretically sophisticated field will surely overlook some worthwhile contributions. For example, our analysis must purposefully ignore some interesting approaches (e. g., Luebbert 1986) that are not amenable to quantitative analysis. We have tried, however, to include most of the important theoretical hypotheses from the coalition politics literature, especially those fitting in to what we see as the two principal approaches to the subject—*size and ideology* and *new institutionalism.*

The Role of Size and Ideology

Theories revolving around size and ideology assume only minimal institutional detail about the government formation process. Developed mostly in the 1960s and

1970s, these theories rely on the tools of cooperative game theory and spatial modeling to produce hypotheses about the effects of a potential coalition's size and ideology on its chances of formation. The earliest theories in this tradition, which assumed that the primary goal of parties (or of the politicians controlling them) is to gain office, modeled government formation as a zero-sum game in which cabinet portfolios are the payoffs. The most basic hypothesis coming out of this particular conception is that only majority cabinets will form: If receiving portfolios is all that matters, then it makes no sense for a majority coalition in parliament to tolerate the existence of a minority government instead of taking the spoils of office for itself.

The first major refinement of this logic is probably the best-known result in the coalition formation literature—the minimal-winning hypothesis first proposed by von Neumann and Morgenstern (1953), applied explicitly to government formation by Gamson (1961), and later revised by Riker (1962). This theory suggests that if parties are seeking office to capture a fixed quantity of portfolios, they will form coalitions that win (that is, control a majority of seats in the legislature) without including any members unnecessary to the government's majority, thereby ensuring that individual members of the coalition obtain the maximum possible office benefits. A related version of this "size principle" is due to Leiserson (1968), who proposed that government members should seek to minimize the number of parties in the coalition, since smaller groups of parties should presumably find it easier to reach agreement. Finally, more recent work argues that the largest party in the legislature is the "centripetal" actor in coalition negotiations and is therefore difficult to exclude from power (van Deemen 1989; Peleg 1981).

The principal alternatives to these office-oriented theories assume that politicians are motivated by policy goals as well as (or instead of) the simple desire to get into office. The first of these theories retained a focus on office but added policy as a secondary consideration. In particular, Axelrod (1970) suggested that office-motivated politicians are interested not only in maximizing their office benefits but also in minimizing the transaction costs of coalition bargaining that policy divisions impose. Axelrod predicted that politicians would form only those winning coalitions containing ideologically adjacent parties. De Swaan (1973) presented another variant of this idea, holding that parties will form the minimal-winning coalition with the smallest ideological range.

Still other work in this tradition has asked which coalitions will form if parties care nothing about office benefits but are concerned only with obtaining their preferred policies. The leading answer thus far comes from

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[1] We refer to a "potential coalition" or "potential government" to mean a combination of parties, or an individual party, that could form a government in some bargaining situation or "government formation opportunity." We assume throughout this study that no single party wins a majority of legislative seats.

the analysis of majority-rule spatial voting models, which have shown that when parties compete along one policy dimension (for example, a left-right dimension), the party controlling the median legislator is essentially a policy dictator. With respect to government formation, the prediction is that the median party will get into the government (Laver and Schofield 1990, 111).[2]

In addition to the median-party hypothesis, researchers have developed other policy-oriented explanations of government formation over the last few years. One such explanation, which builds on the earlier work of Axelrod (1970) and de Swaan (1973), suggests that ideologically divided cabinets, because their members must make greater policy compromises, do not usually survive as long as cabinets whose members are in relative ideological agreement (Warwick 1994). As a result, ideologically diverse cabinets—regardless of their size—should be less attractive to potential coalition partners than more ideologically compact cabinets they could join.

Finally, Laver and Schofield (1990) contend that the ideological divisions in the opposition may be as relevant for the viability of minority cabinets as the ideological diversity of the minority coalition itself. Indeed, one possible reason that many minority governments are able to survive is that they effectively exploit issue-by-issue differences between opposition parties (Strøm 1990). The hypothesis following from this argument is that a more ideologically divided majority opposition should increase the chances that a minority cabinet will form.

From the size and ideology approach, then, we isolate nine testable hypotheses:

Hypothesis 1: *Potential governments are more likely to form if they control a majority of legislative seats*;

Hypothesis 2: *Potential governments are more likely to form if they are minimal winning coalitions*;

Hypothesis 3: *Potential governments are more likely to form the fewer the number of parties they contain*;

Hypothesis 4: *Potential governments are more likely to form if they contain the largest legislative party*;

Hypothesis 5: *Potential governments are more likely to form if they are minimal-connected-winning coalitions*;

Hypothesis 6: *Potential governments are more likely to form if they are ideologically compact minimal-winning coalitions*;

Hypothesis 7: *Potential governments are more likely to form if they contain the median party*;

Hypothesis 8: *Potential governments are more likely to form the smaller their ideological divisions*;

Hypothesis 9: *Potential minority governments are more likely to form the larger the ideological divisions within the opposition they would face.*

The Role of Institutions

An alternative to the size and ideology explanations of government formation began to emerge in the early 1980s. We refer to this alternative approach broadly as "new-institutionalist" because of the emphasis its proponents place on the role of institutions in structuring the outcomes of the coalition-formation process. Different new-institutionalist scholars, however, have tended to emphasize the effects of different sets of institutions. Specifically, while much of this research has focused on the impact of the rules and norms governing the process of government formation itself, more recent work has found an important role for the rules that structure decision making after the cabinet is in place.

Institutions Structuring Pre-Formation Bargaining. Many of the hypotheses connecting institutions to coalition outcomes have drawn on two well-established results of game-theoretic models of legislative bargaining—that procedural powers are important and that the reversion point that obtains in the case of bargaining failure can affect bargaining outcomes. Two procedural powers in particular are important in structuring the process of government formation. The first of these is the power to propose the coalition alternatives over which negotiations will take place. Parties that have this power are known as *formateur* parties. Potential partners must either accept or reject the proposals brought forward by these institutionally designated actors before bargaining over other proposals can proceed. Several noncooperative game-theoretic models of coalition formation have highlighted the special role of the *formateur* party and have provided predictions about how this party can

[2] The more general result is that the party controlling the multidimensional median (or the core) of a multidimensional policy space will be a policy dictator and will therefore be included in the government (Schofield 1978; McKelvey and Schofield 1986, 1987). Since a core party is unlikely to exist, however, Schofield (1993) predicts that policies, and the unique coalitions associated with them, will be located in the "cycle set," the limited area of the policy space for which any policy located inside it is majority-preferred to any policy located outside it. Unfortunately, we are not aware at present of any data available on the existence of core parties or cycle sets for any of the countries and time periods in our study. Clearly, this is a problem that future research on government formation should address, especially since the core party concept represents the main "multidimensional" alternative to the Laver and Shepsle (1996) Portfolio Allocation approach, which we discuss in more detail below.

shape formation outcomes (Austen-Smith and Banks, 1988; Baron 1991, 1993). In general, these theories conclude that the *formateur* party should be able to shape the coalition in important ways, including guaranteeing its own place in the government as well as biasing the ideological profile of the cabinet in its favor. A second procedural power that may affect coalition outcomes is the ability of incumbent prime ministers and (to a lesser extent) incumbent coalition partners to choose the timing of the negotiations. Several scholars have suggested that incumbent cabinets may be able to time upcoming government-formation negotiations to their advantage (Lupia and Strøm 1995; Baron 1998; Diermeier and Stevenson 1999; Martin 2000b; Strøm and Swindle 2000; Laver and Schofield 1990). These rules may particularly advantage the party of the prime minister, who can often control the government agenda (by bringing up or blocking "coalition-breaking" issues), reshuffle the government to appease unhappy members, or even dissolve the legislature and call early elections (Huber 1996; Martin 2000a, 2000b).

Another well-accepted generalization from the formal bargaining literature is that the reversion outcome influences the behavior of the actors involved in the negotiations. Coalition theorists have used this result to suggest that the coalition that will come to power (or remain in place) in the event of a breakdown (or protraction) of coalition bargaining should be able to bias the outcome of the negotiations in its favor. For example, Strøm, Budge, and Laver (1994) assume that an incumbent cabinet (usually acting in a caretaker capacity) that stays in office while bargaining continues is the reversion outcome. Consequently, they argue that these incumbent cabinets will enjoy an advantage in coalition negotiations.

Based on this argument, our empirical work examines whether incumbent cabinets are likely to form again immediately after they collapse. We should note, however, that the logic connecting this particular lesson from the bargaining literature (i.e., that reversion outcomes matter) to the real world of coalition negotiations seems a bit strained. Specifically, the assertion that incumbent cabinets provide the relevant reversion outcome ignores the fact that many cabinets end because one of the governing parties is unhappy with the current coalition. The reversion outcome for such a party is clearly undesirable, and so the coalition enjoys no obvious incumbency advantage in future coalition negotiations. Another problem is that the caretaker cabinet may not be the relevant reversion outcome in coalition bargaining. Although this cabinet is in power during negotiations, its caretaker status often limits its ability to act as a true governing body (e.g., caretaker administrations may not introduce new

legislative proposals in most countries). Furthermore, in the event that bargaining breaks down completely, most countries require a new election, not a continuation of the incumbent government. In such cases, expectations about the outcome of a new election are the relevant reversion points in bargaining.[3]

Complementing these institutional hypotheses drawn from the formal bargaining literature are a number of arguments owing primarily to the work of country experts. One such hypothesis, which is of particular interest to students of Scandinavian politics, suggests that investiture requirements hinder the formation of minority governments (Strøm 1990). The argument is that an investiture rule, because it requires a prospective government to pass a formal majority vote in the legislature before it can take office, prevents minority cabinets that could not pass such a vote from proceeding to govern by building shifting *ad hoc* majorities on government legislation.

Three other hypotheses of concern to country specialists are qualitatively different from those above because they primarily involve behavioral norms rather than formal rules and procedures.[4] The first hypothesis is that when parties make pre-electoral commitments (or "pacts") to form certain governments, these governments will be more likely to form. The second hypothesis is similar but involves a type of pre-electoral commitment in which parties declare that they will not coalesce in certain ways (which we refer to as an "anti-pact"). Most often, this takes the form of ruling out any coalition that includes a particular party—for example, when the CDU/CSU in Germany after the 1949 and 1953 elections refused to ally with the SPD under any circumstances (Klingemann and Volkens 1992). In other cases, such as with Fianna Fail in Ireland, which for most of the postwar period declared that it would only rule alone (Laver 1992), a party might declare an anti-pact with every other party in the system. More unusual anti-pacts rule out a specific coalition, such as when the Democrats '66 in The Netherlands declared that it would not ally itself with both the CDA and the VVD, but that it would ally itself with one or the other of them (Tops and Dittrich 1992). In all of these cases, public commitments not to

[3]In contrast to the argument made by Strøm, Budge, and Laver (1994), Baron and Diermeier (1999) suggest that the incumbent cabinet is actually *disadvantaged* in coalition negotiations.

[4]Laver and Schofield (1990) argue against the inclusion of these three hypotheses in the "new-institutionalist" agenda. Their argument is that these so-called norms are just types of bargaining behavior to be explained, not institutions to be labeled determinants of government formation. Given the inclusive nature of the present empirical project, however, we have decided to incorporate these variables in our empirical models.

rule with some other parties presumably constituted a powerful constraint on coalition bargaining, thereby decreasing the probability that a government consisting of these parties would form.

A third hypothesis in this vein is that some coalitions are unlikely to form, regardless of whether they are subject to explicit "anti-pact" declarations, because they contain parties that promote "anti-system" political views. Some coalition theorists have argued that because strong social norms exist against admitting parties to government that are not committed to the maintenance of the democratic system, the electoral costs of forming coalitions with such parties are prohibitive (Budge and Keman 1990). Other scholars have suggested that external demands from other countries—for example, pressure from the United States to keep Communist parties out of Italian governments during the Cold War (Mastropaolo and Slater 1992)— have made the inclusion of anti-democratic parties in coalition governments especially costly.

In summary, we consider seven hypotheses from this literature:

Hypothesis 10: *Potential governments are more likely to form if they include the* formateur;

Hypothesis 11: *Potential governments are more likely to form the more ideologically compact they are around the* formateur;

Hypothesis 12: *Potential governments are more likely to form if they contain the party of the previous prime minister;*

Hypothesis 13: *Potential governments are more likely to form if they are incumbent administrations*;

Hypothesis 14: *Potential governments controlling a minority of seats in the legislature are less likely to form in the presence of an investiture vote*;

Hypothesis 15: *Pre-electoral announcements by a party promising that it will form particular coalitions increase the probability that these coalitions will form*;

Hypothesis 16: *Pre-electoral announcements promising that a party will not form certain coalitions decrease the probability that these coalitions will form*;

Hypothesis 17: *Potential governments are less likely to form the more pronounced their anti-system views.*

Institutions Structuring Post-Formation Government Decision Making. Laver and Shepsle (1996) provide one of the most recent and comprehensive new-institutionalist approaches to government formation. Their Portfolio Allocation approach differs from other new-institutionalist

theories in a number of important ways. Specifically, its reliance on the spatial voting model commits it to a predominantly policy-oriented view of political motivations, despite the fact that other theorists seem to be moving toward a more balanced policy/office orientation (Strøm 1990; Baron 1998). Second, the principal institutions affecting government formation in this approach are those pertaining to decision making within the government rather than those structuring the process of coalition formation itself.

The Portfolio Allocation approach begins from a multi-dimensional spatial voting model somewhat akin to the policy-oriented models of the size and ideology tradition. Laver and Shepsle, however, assume a particular set of institutional rules relating to government decision making, including the important premise that ministers have dictatorial control over the dimension of policy associated with their ministry. From these assumptions, they generate a number of new hypotheses that center on the existence of parties that enjoy a strategic advantage in coalition formation because of their relative ideological position and size.

These lucky parties, which come in two varieties, "very strong parties" (VSPs) and "merely strong parties" (MSPs), should be able to guarantee their place in the government or even rule alone in a minority government. Laver and Shepsle define a VSP as a party to which a majority coalition prefers to give all the government portfolios rather than support any other government alternative. Thus, this party should be able to form a single-party minority government with support from a legislative majority or, relaxing the formal argument, at least guarantee itself a position in the government. A MSP is not as well placed as a VSP, but it should still be able to get into the government. Although some legislative majority prefers at least one coalition government to the government in which a MSP gets all the portfolios, the MSP is a member of each of these alternative coalitions. Theoretically, then, a MSP is in a position to veto the formation of all governments with any chance of forming and may therefore be able to hold out for its most preferred outcome (a government in which it rules alone). In practice, however, a "standoff" might occur that prevents a MSP from successfully forming a single-party minority government. In any event, no government should form without the participation of the MSP.

Laver and Shepsle's analysis of the technical conditions for the existence of these parties shows that "the strong party concept is not simply restating something obvious" (Laver and Shepsle 1996, 92). That is, mathematically these are not just median parties, multidimensional median parties, core parties, or some other

previously distinguished type of party. Rather, the conditions that define a strong party are much more complex, not always corresponding to a party's centrality or size. That said, the fact that small noncentral parties can sometimes be strong parties does not tell us that they actually are strong parties in the kinds of party systems that we observe in practice. To examine this, Laver and Shepsle perform simulations suggesting that strong parties do tend to be more central than other parties—indeed, it is virtually a requirement that they hold the median position on at least one dimension of policy and that they hold the most legislative seats. These results therefore imply that despite the fact that the strong parties are mathematically distinct from earlier notions of median parties or dominant parties, in practice the concept may do no better than these more simple formulations at predicting the composition of real-world governments. A controlled statistical analysis in which the Portfolio Allocation hypotheses directly confront the median and largest party hypotheses is therefore essential to the empirical assessment of their theory.

In short, then, the Laver and Shepsle model implies four additional testable hypotheses:

Hypothesis 18: *Potential governments are more likely to form if they contain a VSP*;

Hypothesis 19: *Potential single-party minority governments are more likely to form if they contain a VSP*;

Hypothesis 20: *Potential governments are more likely to form if they contain a MSP*;

Hypothesis 21: *Potential single-party minority governments are more likely to form if they contain a MSP.*

Data and Methods

These twenty-one hypotheses represent a good sampling of the received wisdom on the systematic determinants of government formation, including the most recent innovations in this field. Studies of government formation, however, have yet to evaluate most of them in the context of an appropriate multivariate model.[5] Using a simple

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[5]Warwick (1996) performed a multivariate analysis in which he examined the chances that an individual party will get into the government. Since he does not focus on characteristics of potential governments as a whole, however, he cannot directly examine many of the prominent theoretical propositions in the literature that are meaningless at the individual party level (e. g., minimal-winning status). Still, some of his results speak to the present project, as we later show, especially with respect to the selection of the *formateur* and the ideological divisions within coalitions.

linear-regression model, Franklin and Mackie (1984) were the first to perform a multivariate test of some of the size and ideology hypotheses, but they lacked the statistical techniques to model the choice situation properly. The central shortcoming of their approach is that in a regression framework (or even a dichotomous choice framework) each potential coalition in a formation opportunity enters the estimation as a separate case. Thus, including countries such as Italy or Denmark, with a large number of parties at any given time, means that thousands of cases enter the estimation and completely swamp out relationships in other countries. All credible attempts to use regression analysis to analyze this question have recognized this problem and have tried to circumvent it by creating elaborate schemes for weighting cases in the regression (Browne 1970; Franklin and Mackie 1984). Unfortunately, Franklin and Mackie's (1984) work demonstrates that the choice of a particular weighting scheme largely determines the results (which they explicitly recognize). Therefore, to evaluate the theoretical hypotheses above, we abandon the regression framework altogether and turn instead to a maximum-likelihood model that more directly captures the structure of the choice problem. In particular, we model government formation as an unordered discrete choice problem where each formation opportunity (*not* each potential coalition) represents one case and where the set of discrete alternatives is the set of all potential combinations of parties that might form a government.[6]

Maximum-likelihood estimation has become the standard approach to modeling these kinds of data—especially in the literature on consumer choice in economics (Greene 1993) and increasingly in political science (Whitten and Palmer1996)—because it allows the researcher to choose a distribution for the dependent variable that is appropriate to the true form of that variable. The univariate normal distribution (the assumption used if one models this as a regression), or even the univariate Bernoulli distribution (the assumption used in logit or probit), is inappropriate because each assumes that every potential coalition is independent of all the others, which is clearly not true since one and only one potential coalition in a given bargaining situation can in fact form. A more appropriate choice for these kind of data is the multinomial distribution. The particular specification of the multinomial model we adopt is McFadden's *conditional logit* model (McFadden 1973, 1974).[7] This model has a

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[6] The number of potential coalitions in any bargaining situation is equal to $2^p - 1$, where p is the number of legislative parties.

[7]Unordered discrete-choice models such as the conditional logit posit that a particular form of the multinomial distribution char-

very important advantage over the regression approach: Since the unit of analysis is the formation opportunity and not the potential coalition, adding a country with a very large number of potential coalitions per formation opportunity is not problematic.[8] Consequently, schemes for weighting cases are unnecessary.

The countries and years in our data set are Austria (1949–82), Belgium (1946–85), Canada (1945–84), Denmark (1945–84), West Germany (1949–87), Iceland (1946–87), Ireland (1948–86), Israel (1949–84), Italy (1949–87), Luxembourg (1945–84), The Netherlands (1948–86), Norway (1945–86), Sweden (1945–86), and the United Kingdom (1945–87).[9] The data consist of all the governments that formed as well as all the potential

acterizes the probability that an individual chooses a particular alternative from some set of all possible alternatives. The general form of the multinomial distribution is

$$P(n_1, n_2, \ldots, n_3) = \frac{N!}{\prod\limits_{i=1}^{m} n_i} \prod\limits_{i=1}^{m} \pi^{n_i},$$

where the m random variables n_i indicate the number of occurrences in N trials of choice i and where π is the probability that choice i is made in any one trial. McFadden (1974) proposed a particular parameterization of π that he called the conditional logit (because the model is specified conditional on m_i) and that Amemiya calls the multinomial logit (we adopt McFadden's label). In this model, the probability that individual i chooses alternative j is

$$P_{ij} = \frac{\exp(x'_{ij}\beta)}{\sum_{k=0}^{mi} \exp(x'_{ij}\beta)}$$

[8] One potential drawback of the conditional logit model is that it assumes the independence of irrelevant alternatives (IIA), which implies that the odds of choosing one alternative over another do not depend on any other alternatives in the choice set or on the values of the covariates associated with those alternatives. Whether this assumption causes problems for inference in any specific instance is an empirical question (Quinn, Martin, and Whitford 1999), and we therefore use standard statistical tests (proposed by Hausman and McFadden 1984) to determine whether the IIA assumption is a problem in our application of conditional logit. Following the suggestion of McFadden (1974), we drop a random set of alternatives from each formation opportunity (never dropping the government that actually formed) and then apply the Hausman test. We begin by dropping 10 percent of the alternatives from each formation opportunity—and then, to be sure that the randomization procedure is not producing unusual answers—we repeat the sampling process and recalculate the Hausman test statistic twenty times. In each of the tables in the results section, we report the average p-value (over the twenty replications) for rejecting the null hypothesis that the IIA assumption holds. In every case, we are far from being able to reject the null hypothesis and thus conclude that the IIA assumption is not problematic in our application.

[9] Since we are only interested in formation opportunities in which no single party won a majority of legislative seats, we excluded all bargaining situations in the United Kingdom, except for the one following the 1974 parliamentary election.

governments that could have formed in these democracies during the periods indicated. All together, the data comprise information on a total of 33,256 potential governments for 220 formation opportunities, each with one potential government that formed. Each potential coalition in any formation opportunity also has attached to it a set of institutional, ideological, and size-related characteristics that will serve as independent variables in our analysis.

All of the independent variables constructed from legislative seat shares (*minimal-winning coalition*, *minimal-connected-winning coalition*, *ideologically compact minimal-winning coalition*, *median party in coalition*, *minority coalition*, and *largest party in coalition*) are dichotomous and derive from the seat results reported by Mackie and Rose (1991), the corrections to these results from Appendix B of Lijphart (1994), and for later elections, the results reported in special issues of the *European Journal of Political Research*. All independent variables constructed from left-right ideology scores derive from the party ideological positions provided in the manifestos project of the European Consortium for Political Research, using the formula for determining party positions on the left-right scale from Laver and Budge (1992, 26–27). These include the dichotomous variables *median party in coalition*, *minimal-connected-winning coalition*, and *ideologically compact minimal-winning coalition* and the continuous variables *government ideological divisions* and *potential opposition ideological divisions*. We define these latter variables as the absolute distance between the most distant pair of parties in the (government or opposition) coalition in question.[10]

The variables *pre-electoral pact* and *anti-pact* are dichotomous indicator variables based upon the individual country surveys found in Laver and Budge (1992) and other historical descriptions of individual formation opportunities. For each formation opportunity, we searched these historical materials for instances in which parties explicitly committed themselves to participate or not to participate in certain coalitions. For example, Strøm and Leipart (1992, 71), in their discussion of constraints on coalition bargaining in Norway, refer to the continual refusal of the Labour party to consider entering government with any other party. Based upon this observation, we have thus assigned any potential multiparty coalition in Norway containing the Labour party an anti-pact score of "1." Similarly, for the Norwegian case in 1969,

[10] To facilitate the estimation procedure, we rescaled these continuous ideology variables, as well as the anti-system variable, to lie on a continuous [0, 1] interval by simply dividing them by their respective maximum sample values. This will make no difference to the interpretation of the results.

in which the governing parties promised to renew their coalition if they retained their legislative majority following the election, we assigned a pre-electoral pact score of "1" to this coalition (which did, in fact, narrowly retain its majority in the *Storting*). Finally, the variable *anti-system presence* is a continuous measure corresponding to the anti-system score of the party having the greatest anti-system score within the potential coalition. This score is from the manifestos data project's category *anti-establishment views*, as defined by Laver and Budge (1992, 24).[11]

Finally, we include four Portfolio Allocation variables. The first is simply a dummy variable indicating whether a potential coalition includes a very strong party. A second dummy variable provides an even stronger test of the VSP hypothesis by singling out potential (minority) governments in which a VSP rules alone. We also calculated similar variables for coalitions containing merely strong parties.[12]

The final modeling issue pertains to Hypotheses 10 and 11. Earlier, we argued that the *formateur* party, due to various procedural powers granted to it in the formation process, will be able to guarantee its place in the cabinet that eventually forms and to shape the ideological makeup of the cabinet to its liking. The problem with testing these hypotheses directly is that we have inadequate data on the identity of the *formateur*. This is not especially problematic in testing Hypothesis 11 since we do know that the last (by definition, successful) *formateur* will be the prime minister in the new cabinet. We can therefore test this hypothesis by first constructing a variable measuring the ideological "spread" of the coalition around the party that we know will control the premiership and by then estimating the effect of this variable in a sample in which we drop all potential coalitions not containing this party (the "restricted" sample). This will allow us to test whether potential coalitions that are more ideologically favorable to the prime minister's party are more likely to form, given that the identity of the new prime minister is known.

Hypothesis 10 suggests that *formateurs* will be able to guarantee themselves a place in cabinet. Obviously, we cannot begin, as above, by taking advantage of the fact that the prime minister was the last *formateur* (since this party always gets into the cabinet by definition). To test this hypothesis, then, we use proxies for the identity of the *formateur* in place of the variable itself. If these proxies prove to be important predictors of cabinet composition, then we may be able to conclude that *formateur*-ship does have the effects predicted by the theory. [13]

In identifying good proxies, we have both good news and bad news. The good news is that some very good proxies exist. Both Stevenson (1997) and Warwick (1996) find three variables that together predict the identity of the *formateur* with near certainty. The bad news, however, is that these variables are the *previous prime minister*, the *largest party in the legislature*, and the *median party*, all of which have already been implicated in hypotheses other than those concerning the *formateur*. Thus, simply including them in an empirical model and finding that they have an impact will not permit us to distinguish between the *formateur* story and the other stories about how these variables may be important.

One way that we may be able to get some leverage on this question is by finding a way to distinguish whether the effects of the various proxy variables are felt only in choosing the *formateur* or whether these effects are felt throughout the formation process (i.e., after a *formateur* has been identified). For example, if the median party variable is a good predictor of the identity of the *formateur* but is not a good predictor of cabinet membership once the identity of the *formateur* is given, then we might prefer the institutional (*formateur*) hypothesis over the pure ideology hypothesis, which implies that median parties will always get into cabinets because of their centrality in the policy space. Conversely, if we find that the median party variable predicts both the identity of the *formateur* and the identity of the rest of the cabinet given the *formateur*, then we must conclude that at least part of the median party's effect is due to reasons other than simply its use in identifying *formateurs*. We can evaluate each of the other proxies in a similar manner.

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[11]It is important to emphasize that the "anti-pact" and "anti-system" variables are distinct. While anti-pact restrictions for several coalitions are the result of commitments by pro-system parties to exclude anti-system parties, there are also many coalitions composed entirely of pro-system parties that are subject to anti-pact restrictions. In these cases, one party has simply made it clear that it will not form a government with another party following the election (which may be for any number of reasons not having anything to do with anti-system ideology). In contrast, the anti-system variable pinpoints only those parties that have expressed anti-system views in their manifestos.

[12]By definition, a potential coalition cannot contain both a very strong party and a merely strong party since they cannot occur in the same formation opportunity. The data for these variables were generated using Laver and Shepsle's Winset program and were provided to us by Paul Warwick.

[13]Those familiar with the statistical problem of nonrandom assignment will have pause at this substitution. In general, as Achen (1986) has shown, this instinct is a good one, since normally a two-equation estimation strategy would be required to deal adequately with the problem described here. Achen also demonstrates, however, that if the assignment procedure (here the selection of the *formateur*) is nearly deterministic, biases stemming from substitutions like those described above are negligible. Since the variables mentioned in the text are quite accurate predictors of who the *formateur* will be (over 90 percent in Stevenson 1997), we are satisfied that the estimation strategy introduces no important bias.

All that remains, then, is to construct a method for isolating whether the effects of our variables have a primary impact in *formateur* selection, in partner selection given a *formateur*, or in both stages. We do this by estimating the models on both the full and restricted samples, as defined above. If our proxies are unimportant in the sample restricted to potential coalitions that contain the last *formateur*, but are important in the full sample, we know that their effects come principally from the selection of the *formateur*.[14]

Results

In the tables below, we provide estimates of the coefficients from the conditional logit model as well as appropriate standard errors. The signs of coefficients accurately reflect the direction of the corresponding substantive effects. For example, a positive coefficient associated with a coalition characteristic means that if a coalition has "more" of that characteristic, then its odds of forming will go up and the odds of every other coalition forming will go down. Since these models are nonlinear, however, the estimates provide information only about the direction and statistical significance of the relationships, not about the substantive magnitude of the effects.

The Effects of Size and Ideology

In Table 1, we evaluate the set of size and ideology theories using six different model specifications. These models initially incorporate only the pure office-oriented hypotheses (Model 1), then add the hybrid office/policy hypotheses (Model 2), and then sequentially include the pure policy hypotheses (Models 3–5). We also include a final specification (Model 6) that we use as the basis for comparison with the institutional models reported in the next section.

The first important message to draw from Table 1 is that, with the exception of the minority cabinet variable, the various specifications all tell the same substantive story—that both policy and office benefits play a significant role in government formation. Besides this general conclusion, a number of more subtle messages emerge from these results. First, since all coalitions must be ei-

ther minimal winning, minority, or surplus majority, the results for Model 1 indicate that minimal-winning coalitions are more likely to form than the other two types of cabinets and that surplus-majority coalitions and minority cabinets are not significantly more or less likely to form relative to one another.[15] It is immediately clear, then, that minimal-winning theory is a significant improvement on the intuitive idea that majority cabinets are more likely to form than cabinets that control only a minority of legislative seats. In addition, the results from Model 1 provide support for the idea that, all else equal, coalitions with fewer parties are more likely to form, as well as those coalitions that include the largest legislative party.

With respect to the impact of policy differences on coalition formation, the other models in Table 1 send three messages. First, policy divisions seem to be important for all potential coalitions, not just minimal-winning ones. For example, although the minimal-winning connectedness variable is positive and significant in Models 2 and 3, it falls to insignificance when the more general measure of coalition policy divisions is included in the specification (Model 4); likewise, the variable marking the least ideologically divided minimal-winning coalition has the wrong sign and is not statistically different from zero in some specifications. The general policy divisions variable, however, is statistically significant and in the expected direction, indicating that any potential coalition is less likely to form the greater the ideological incompatibility of its members, regardless of its size.[16]

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[14]Clearly, in testing this hypothesis we must worry whether there are multiple *formateurs* in a single-formation opportunity (i.e., where one *formateur* fails to form a cabinet and resigns in favor of another). Although there are many cases of multiple *formateurs* in parliamentary democracies, Stevenson (1997) has shown that in most of these cases an individual politician fails, not a party. Thus, the *formateur*-ship, while it may pass between leaders of the same party, does not usually fall to a new party.

[15]We code the majority status variable by giving a "1" to a minority coalition. This makes interpretation of the results more straightforward in the models that follow, which include several variables interacted with minority status, but makes the interpretation of Model 1 less intuitive, since minimal-winning status is essentially an interaction between majority status (i.e., 1 minus minority status) and minimal size. Accounting for the various interactions is not difficult, however, and simply means the proper coefficient for surplus majority cabinets is –1 multiplied by the minority estimate (0.10), while the proper coefficient for minimal-winning coalition is actually the sum of this number and the coefficient for minimal-winning coalition that appears in the table (0.84).

[16]An alternative reading of these results is simply that attempts to distinguish empirically between subtle variations in the way policy considerations enter into the coalition-formation process are probably futile. Indeed, Achen (1986) shows that when two variables both measure the same underlying variable with different and imperfect degrees of accuracy, estimates for the variable measured least accurately will be biased (and will often have the wrong sign) if the measurement error in the two variables is correlated. Thus, rather than depending on subtle and potentially unreliable interpretations of these coefficients, it may be more prudent simply to take away the message that policy distance matters and then to measure it in the most obvious way—namely, by using policy distance directly rather than the minimal-connected winning or minimal-winning ideological range variables.

TABLE 1 Conditional Logit Analysis of the Effects of Size and Ideology on Government Formation

(Non-Majority Situations, Full Sample)

Independent Variables	Model 1 (Full Sample)	Model 2 (Full Sample)	Model 3 (Full Sample)	Model 4 (Full Sample)	Model 5 (Full Sample)	Model 6 (Full Sample)
Minority Coalition	-0.10 (-0.35)	-0.07 (-0.22)	0.03 (0.10)	-0.10 (-0.35)	-1.12 (-2.85)	-1.14 (-2.09)
Minimal Winning Coalition	0.74 (3.17)	0.61 (2.47)	0.75 (3.00)	0.97 (3.78)	0.80 (3.08)	0.70 (2.97)
Number of Parties in the Coalition	-0.75 (-6.98)	-0.76 (-7.02)	-0.81 (-7.40)	-0.52 (-4.27)	-0.61 (-4.80)	-0.62 (-4.90)
Largest Party in the Coalition	1.83 (8.89)	1.85 (8.97)	1.75 (8.40)	1.73 (8.35)	1.40 (6.38)	1.40 (6.41)
Minimal Connected Winning Coalition		0.58 (2.31)	0.29 (1.12)	0.13 (0.48)	0.20 (0.77)	—
Ideologically-Compact Minimal Winning Coalition		-0.32 (-1.13)	-0.43 (-1.49)	-0.68 (-2.34)	-0.58 (-1.97)	—
Median Party in the Coalition			0.66 (3.66)	0.57 (3.09)	0.38 (1.99)	0.34 (1.91)
Ideological Divisions in the Coalition				-3.36 (-4.39)	-2.67 (-3.40)	-2.36 (-3.18)
Ideological Divisions within Majority Opposition					3.10 (4.23)	3.22 (4.45)
Log-likelihood	-733	-730	-724	-713	-704	-706
Average p-value for rejecting IIA assumption*	0.62	0.80	0.71	0.90	0.89	0.88

Entries are unstandardized maximum likelihood coefficients with t-ratios in parentheses.

Number of formation opportunities = 220. Number of potential coalitions = 33,256.

*A p-value < .05 indicates that we can reject IIA at conventional levels. The test procedure is described in the text.

Second, consistent with the "pure" policy explanation of government formation, these findings indicate that coalitions containing the median party are more likely to form. Third, the results from Model 5 show that potential minority cabinets are more likely to form the greater the ideological divisions between parties in the opposition.[17] This is very much in line with explanations of minority government that emphasize the inability of opposition parties to overcome their ideological differences and remove the cabinet (or prevent it from forming). Taken together, then, the findings from Table 1 show that both size and ideological centrality play an important role in coalition formation. In Model 6, we provide a streamlined version of the size and ideology model that we employ in the specifications below.[18]

The Effects of Institutions

In Tables 2 and 3, we test the various hypotheses stemming from the two versions of new-institutionalist theory. In Table 2, we provide the estimates of the variables relating to the rules and norms of the coalition bargaining process. In Table 3, we incorporate the Portfolio Allocation variables from Laver and Shepsle (1996).

Institutions Structuring Pre-Formation Bargaining. The estimates for the size and ideology variables examined in Table 1 appear to be very robust to the inclusion of the new-institutionalist variables in Table 2. This is in itself an important result since it represents the first time that anyone has evaluated both institutional and traditional size and ideology variables in the same statistical model. Moreover, most of the new-institutionalist variables are statistically significant and consistent with theoretical expectations.

The first set of institutional hypotheses we discuss concerns the ability of the party selected as the *formateur* to guarantee its place in the cabinet and perhaps to shape the cabinet to its liking. Specifically, we argued that parties that are likely to be chosen as the *formateur* (the largest party, the median party, and the party of the previous prime minister) should be included in the coalition that forms. Of course, since other theoretical arguments also speak to the importance of these variables, simply including them in our empirical models does nothing to support or refute the role of the *formateur* in the process. Fortunately, conditioning on the identity of the final *formateur* (the prime minister of the government that eventually forms) helps us to isolate the source of the effects of these variables.

Concerning the role of the largest party, for example, the estimates in Models 7 and 8 show that although potential coalitions including this party are more likely to form in the full sample, this is no longer true once the model is made conditional on the identity of the *formateur*. This suggests that the largest party is more likely to be selected as the *formateur*, but if for some reason it is not appointed *formateur*, it is no more likely than any other party in the legislature to be brought into the government as a partner. This finding contrasts sharply with the explanations offered by Peleg (1981) and van Deemen (1989) and makes it clear that the institutional process of government formation—rather than simple considerations of size—accounts for the tendency of the largest party to get into the government.

In contrast, the median party appears to be important at both stages of the government formation process. In both the full and restricted samples, the coefficient on the median party variable is positive and statistically significant. Consequently, this finding does not allow us to restrict the importance of the median party only to *formateur* selection, though by the same token we cannot refute the hypothesis that median status may play some role at this stage. This result is consistent with the years of work by spatial modelers who have predicted that the median party should be difficult to exclude from cabinets—regardless of whether it is the *formateur*. [19]

Our analysis finds no support for the hypothesis that the party of the previous prime minister enjoys any advantage in getting into the government (aside from its status as a member of the incumbent cabinet, which we discuss below). First, the results from the full sample

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[17] The majority-opposition divisions variable is coded so that it is zero for all potential majority coalitions (which, by definition, face minority oppositions) and takes on a range of values for any potential minority cabinet. Consequently, to capture the full effect of being a minority cabinet facing a particular opposition, one must look at both the minority-status coefficient and the majority-opposition divisions coefficient. Taking both estimates together, we see that for minority cabinets facing majority oppositions that are among the top third most ideologically compact in the sample, the estimated coefficients cancel each other out. If the ideological divisions of the majority opposition are greater than this, however, the corresponding minority cabinet is actually more likely to form.

[18] We also estimated all of the models reported below using the full size and ideology specification (Table 1, Model 5). In no case does this matter in our interpretation of the results.

[19] Technically, although this result can tell us definitively that median party status is important in the second stage of the coalition formation process (that is, when the *formateur* is not the median party, it tends to select median parties to join it in government), it does not directly show that median parties are important in the selection of the *formateur* in the first place. Other work, however, shows that median parties are more likely to be appointed as *formateurs* (Warwick 1996; Stevenson 1997).

TABLE 2   Conditional Logit Analysis of the Effects of Size and Ideology
and Pre-Formation Institutions on Government Formation

(Non-Majority Situations, Full and Restricted Samples)

Independent Variables	Model 7 (Full Sample)	Model 8 (Restricted Sample)	Model 9 (Restricted Sample)
Minority Coalition	−0.85 (−1.76)	−0.65 (−1.29)	−0.72 (−1.43)
Minimal Winning Coalition	0.55 (2.15)	0.47 (1.76)	0.46 (1.74)
Number of Parties in the Coalition	−0.31 (−2.27)	−0.38 (−2.68)	−0.52 (−3.80)
Largest Party in the Coalition	1.40 (5.28)	−0.32 (−0.75)	−0.39 (−0.89)
Median Party in the Coalition	0.32 (1.62)	0.45 (1.85)	0.52 (2.19)
Ideological Divisions in the Coalition	−2.92 (−3.42)	−3.30 (−3.76)	—
Ideological Divisions within Majority Opposition	2.64 (3.19)	1.99 (2.26)	2.32 (2.66)
Ideological Divisions between *Formateur* and Partners	—	—	−2.37 (−2.56)
Previous Prime Minister in the Coalition	−0.13 (−0.52)	−0.78 (−2.04)	−0.77 (−2.00)
Incumbent Coalition	1.89 (9.21)	2.06 (9.95)	2.07 (9.96)
Minority Coalition where Investiture Vote Required	−0.91 (−2.67)	−0.92 (−2.63)	−0.91 (−2.60)
Anti-System Presence in the Coalition	−19.13 (−5.15)	−17.70 (−4.79)	−17.24 (−4.68)
Pre-Electoral Pact associated with the Coalition	2.72 (4.40)	2.02 (3.33)	2.01 (3.28)
Anti-Pact associated with the Coalition	−4.10 (−3.94)	−4.19 (−3.98)	−4.16 (−3.96)
Log-likelihood*	−559	−459	−463
Average p-value for rejecting IIA assumption**	0.90	0.83	0.99

Entries are unstandardized maximum likelihood coefficients with t-ratios in parentheses.

Number of formation opportunities = 220. Number of potential coalitions: full sample = 33,256; restricted sample = 16,628.

*Note that the log-likelihood statistics for Models 8 and 9 are not comparable to those of Models 1 through 7 because the samples on which they are based are not identical.

**A p-value < .05 indicates that we can reject IIA at conventional levels. The test procedure is described in the text.

show that the party of the incumbent prime minister is no more or less likely than other any party in the legislature to be the *formateur* of the next government. Furthermore, the significant negative coefficient from the restricted sample in Model 8 indicates that if this party does not become the *formateur,* it is actually *less* likely to be included in the cabinet. This intuitively pleasing result suggests that a party controlling the premiership in one

administration that is unable to hold on to it in the succeeding administration is unlikely to enter the new government as a partner.

Another result relevant to the role of the *formateur* party involves the expectation that it will bias the ideological complexion of the government towards its own position. We test this expectation in Model 9, replacing the government ideological divisions variable with a

TABLE 3   Conditional Logit Analysis of the Effects of Size and Ideology and Pre-Formation and Post-Formation Institutions on Government Formation

(Non-Majority Situations, Full and Restricted Samples)

Independent Variables	Model 10 (Full Sample)	Model 11 (Restricted Sample)
Minority Coalition	0.05 (0.09)	0.03 (0.05)
Minimal Winning Coalition	0.92 (2.89)	0.78 (2.37)
Number of Parties in the Coalition	–0.26 (–1.55)	–0.37 (–2.12)
Largest Party in the Coalition	0.99 (3.28)	–0.12 (–0.26)
Median Party in the Coalition	0.10 (0.43)	0.14 (0.48)
Ideological Divisions in the Coalition	–4.72 (–4.14)	–5.37 (–4.61)
Ideological Divisions within Majority Opposition	1.04 (0.93)	0.41 (0.33)
Previous Prime Minister in the Coalition	0.00 (0.02)	–1.17 (–2.57)
Incumbent Coalition	1.69 (7.15)	1.79 (7.37)
Minority Coalition where Investiture Vote Required	–1.12 (–2.97)	–1.17 (–2.96)
Anti–System Presence in the Coalition	–17.05 (–4.59)	–15.87 (–4.33)
Pre-Electoral Pact associated with the Coalition	3.51 (4.47)	3.18 (3.47)
Anti-Pact associated with the Coalition	—	—
Very Strong Party in the Coalition	1.12 (2.32)	0.40 (0.60)
Very Strong Party *alone* in the Coalition	0.93 (2.36)	0.78 (1.92)
Merely Strong Party in the Coalition	0.34 (1.02)	0.43 (1.14)
Merely Strong Party *alone* in the Coalition	–1.91 (–1.75)	–1.26 (–1.14)
Log-likelihood*	–410	–330
Average p-value for rejecting IIA assumption**	0.85	0.68

Entries are unstandardized maximum likelihood coefficients with t-ratios in parentheses. For Models 10 and 11, the number of formation opportunities=170. Number of potential coalitions: full sample = 24,932; restricted sample = 12,466.

*Note that the log-likelihood statistics for Models 10 and 11 are not comparable to each other nor to any of those from the previous models because the samples on which they are based are not identical.

**A p-value < .05 indicates that we can reject IIA at conventional levels. The test procedure is described in the text.

variable measuring the ideological distance between the final *formateur* (the party of the prime minister) and the most ideologically distant government partner in each potential coalition. As expected, this variable is negatively signed and strongly significant. Thus, as the ideological divisions within a coalition get larger (from the

perspective of the prime minister) the coalition is less likely to form.[20] Unfortunately, this result must remain partial due to limitations in the data. Namely, because of very high collinearity between this variable and the variable measuring the ideological divisions within the cabinet as a whole (a correlation greater than 0.9), it is impossible to include both variables in the same model in any meaningful way. Consequently, while we can be sure that ideological divisions in the cabinet as a whole are important to formation, we cannot be sure whether the divisions between the *formateur* party and its partners exhibits any independent effect.

In Model 7, we also test the hypothesis that an incumbent government will enjoy an advantage in coalition negotiations due to its (supposed) position as the reversion point in bargaining. Despite our misgivings about the theoretical soundness of this argument, the empirical results do support the conclusion that incumbent cabinets are more likely to form than other cabinets. Remarkably, this is true even controlling for the fact that some incumbent governments commit themselves to reform if they win the elections (accounted for by the pre-electoral pact variable) and for those variables (such as minimal-winning status, etc.) that got incumbent parties into government in the first place. Given the logical problems with the theoretical explanations for this variable, however, our message is not that this result confirms these explanations but rather that it is probably worth the effort for theorists to tighten up the reversion point argument or to seek other arguments that would explain this result.

We also find strong support for the four hypotheses drawn from the work of country specialists. First, our results are consistent with the hypothesis that minority governments are less likely to form in countries with an investiture vote. Specifically, the results show that the negative effect of minority status is twice as large in systems with an investiture vote than in those without (shown by adding the coefficients for minority status and for the interaction of minority status and investiture). This is an important finding for new-institutionalist theory since, until now, researchers had presented no evidence that this comparison would hold up when controlling for other factors. In addition, this result not only lends credence to an institutional approach to government formation but also highlights the importance of policy considerations in that process. After all, the logic behind the explanation for the effects of the investiture vote is that where it is not found, minority governments can make issue-by-issue coalitions with different opposi-

tion parties. This obviously presupposes the idea that parties are concerned about policy and not simply about office benefits.

Second, the results support our theoretical expectations concerning the two types of pre-electoral pacts. When one party publicly excludes another party from consideration as a coalition partner, it is very unlikely that a potential coalition containing these parties will form. Similarly, a potential government that is announced before an election in the form of a pre-electoral coalition will be more likely to form than a similar potential government that is not announced.

Finally, the effect of the anti-system status of a potential coalition is also in the expected direction and highly significant. This is an interesting result not only because it shows that anti-system parties are systematically excluded but because this effect remains significant even when controlling for the existence of exclusionary pacts. The anti-pact variable, which includes cases in which parties have gone on record that they will not coalesce with certain "anti-system" parties, captures most of the standard set of "noncoalitionable" parties in the countries examined. These findings suggest, then, that the anti-system result also depends on "coalitionable" parties that take some anti-system stances but do not go so far as to face categorical exclusion from government.

Institutions Structuring Post-Formation Government Decision Making. In Table 3, we present the results from our analysis of the Portfolio Allocation approach. These findings provide strong support for the importance of very strong parties and less convincing evidence for the special role of merely strong parties. Very strong parties do tend to get into government and, even more, to rule alone. Further, the difference between the results for the full and restricted samples makes it plain that very strong parties tend to gain control of the premiership in the new government.[21] The evidence for the importance of merely strong parties is weaker. Specifically, while the coefficient on the merely strong party variable is positive, indicating that potential coalitions containing one of these parties are more likely to form, it is not statistically significant at conventional levels. More informative, perhaps, is the almost significant negative coefficient on the interaction term that identifies potential governments in which merely strong parties would rule alone. When combined with the previous coefficient (as it must be since it is an interaction), the proper coefficient captur-

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[20]This is consistent with the party-level analyses of Warwick (1996) and Stevenson (1997).

[21]In the restricted sample, the insignificant coefficient on VSP and the significant one for VSP forming alone indicate that most VSPs are the final *formateurs* and that the particular coalition they are likely to form is the one in which they rule alone.

ing the effect is indistinguishable from zero.[22] This suggests, then, that although a merely strong party may (weakly) have a better chance of getting into the government, it does not consistently win "standoffs" with other parties and therefore does not usually rule alone.

Moreover, we note that, despite the difference in sample size due to the smaller data set used by Laver and Shepsle, most of the relationships we have already explored are robust to the inclusion of the Portfolio Allocation variables.[23] Of particular interest is the enduring impact of the investiture requirement on the formation of minority governments. This is important because the strong party variables, when interacted with single-party (and by definition, minority) status, pull out a subset of minority governments that are very well placed to form. Even after we take account of these particularly likely minority governments, however, the negative effect of the investiture rule remains strong and statistically significant. As a result, we can be sure that the effect of the investiture rule is not the result of a spurious correspondence between the existence of certain well-placed parties capable of forming minority governments and countries with investiture rules.

The median party and majority opposition divisions variables, however, are not robust to the inclusion of the Portfolio Allocation variables. First, it seems clear that the concept of the strong party beats out the uni-dimensional median as a way to capture the significance of a party's weight and spatial centrality in coalition bargaining. This is an important finding and goes a long way towards showing that the Laver and Shepsle approach provides added value beyond the simpler hypothesis that central (in particular, median) parties are strategically well placed to get into the government. Second, the effects of the Portfolio Allocation variables remain strong after controlling for the ideological divisions within the majority opposition, but the effects of the latter variable are no longer statistically different from zero. Thus, it appears that the strong party concept does a good job of accounting for how the relative spatial positions of *all* the parties in the legislative environment affect which governments form.

Overall Predictive Accuracy

One common critique of cross-national quantitative or systematic theoretical approaches to studying govern-

ment formation is that their predictive accuracy is rather poor (von Beyme 1983). Such critiques, however, seem to be somewhat biased against the quantitative approach. After all, they are not based on results that take advantage of the full predictive power of a controlled multivariate model but on the admittedly uninspiring results of bivariate comparisons. To correct this deficiency, we have generated predicted probabilities of formation for each potential government in each formation opportunity in the data set (based on the coefficients from Models 6, 7, and 10) and then compared these predictions with the coalitions that actually formed. Assessing the predictive success of models such as the ones we have estimated is not particularly straightforward, but one obvious option is to generate predicted probabilities from the model and then predict that the coalition with the highest probability will form. We can then easily compare these predictions with the coalitions that did form.

One immediate conclusion we may draw from this exercise is that the traditional size and ideology variables (Model 6) appear to be rather limited predictors of government composition, as critics of coalition theory have long contended. Potential coalitions predicted by this set of variables as the most likely to form actually go on to form only 11 percent of the time. This prediction rate is substantially less than those from models incorporating institutional factors. A comparison with the predictions from Model 7 illustrates this point. Accounting for the impact of preformation institutions on coalition bargaining as well as the size and ideology variables increases the prediction rate by almost 30 percent. In other words, these variables together predict the government correctly a respectable 40 percent of the time. Finally, the prediction rate from Model 10, which incorporates the Portfolio Allocation variables, is the highest of all those considered thus far. The inclusion of these variables improves the predictions of Model 7 by approximately 4 percent.

All said, then, the full model predicts the correct government approximately half the time. This is a real improvement over the usual predictive success of empirical models of government formation. Indeed, given that in most of the bargaining situations for the countries in this study hundreds—and frequently, thousands—of coalitions could potentially form a government, and given the rather unsuccessful efforts of previous studies that have not relied on a multivariate statistical model, this prediction rate is extraordinary.

We should note that other models (see Laver and Budge 1992) have reported higher success rates (70 percent in some cases) but unlike our predictions, they gain this success by predicting a large number of coalitions and then finding that one of these predicted coalitions did in fact form. The important statistic for comparing

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[22]It is worth emphasizing that these coefficients should not be interpreted as showing an almost significant negative effect since when properly combined the effects are quite close to zero, given their standard errors.

[23]The reduction in sample size, however, does lead to insufficient variation in the number of anti-pacts, thereby no longer permitting us to obtain reliable estimates of the anti-pact coefficient.

the accuracy of our models with previous efforts, then, is *predictive efficiency* rather than a simple rate of success. This statistic is simply the proportion of cabinets correctly predicted out of all the cabinets that the theory predicted could have formed. For example, a prediction that a cabinet with the median party will form predicts half the possible coalitions, and so even if one of these many coalitions forms, predictive efficiency would be very low. The efficiency rate for each of our models is the same as the accuracy rate: 11 percent (Model 6), 39 percent (Model 7), and 43 percent (Model 10). In contrast, Laver and Budge show seven general models for predicting cabinet formation with mean efficiency of 8 percent, 25 percent, 6 percent, 10 percent, 10 percent, 7 percent, and 22 percent. Only in less general models that cannot make any prediction at all in 116 of the 209 cases they consider do their efficiency rates approach ours (three models with efficiency rates of 33 percent, 40 percent, and 46 percent for the cases in which they can make predictions). In short, the predictive power of our final model is clearly superior to previous efforts in the literature on government formation.

Conclusion

In this study, we have subjected the theoretical work on government formation to a controlled statistical analysis. Some of our findings, while they confirm the overall importance of size and ideology and political institutions, suggest important revisions to the standard thinking about what drives cabinet formation. We now summarize some of the more significant findings:

- In systems without an investiture vote, the impact of majority status on the chances a potential cabinet will form is negligible. Therefore, all else being equal, majority cabinets and minority cabinets have the same chance of forming in these systems.
- A party is more likely to get into government if it controls the largest number of legislative seats, just as several size-oriented theories have suggested, but only if it is successful in gaining control of the premiership. All else being equal, then, the largest party is no more or less likely than any other party in the legislature to enter the government as a partner of the prime minister.
- Incumbency for the coalition as a whole has an independent, positive effect on the chances that it will form the next government. This is true even when controlling for the factors that made the coalition an incumbent in the first place.

- The above conclusion does not extend to incumbent prime ministers, apart from their status as members of the previous cabinet. Moreover, if the party of the prime minister in the outgoing government fails to become the *formateur* of the new government, it is actually *less* likely to enter the coalition.
- Laver and Shepsle's theory suggests that Merely Strong Parties should be able to rule alone in minority cabinets, but only if they can win "standoffs" with other parties. Our analysis suggests that while MSPs do tend to get into cabinets, they do not usually win such standoffs and therefore do not rule alone.
- Laver and Shepsle's notion of Very Strong Parties "beats out" median status and the ideological spread of the opposition as a way to predict whether minority cabinets will form. This is the only result from a controlled statistical analysis that supports the usefulness of their model.[24]

Aside from these specific findings, several general messages emerge from the analysis. One is simply that current research on the way cabinets form seems to be progressing in an empirically sound direction. New theories adding institutional detail to earlier considerations of size and ideology do a lot to help the predictive content of models of coalition formation and should continue to provide the focus for theoretical efforts. More than this, however, our work suggests that it is useful for institutional approaches to investigate the effects of the specific institutions governing cabinet formation as well as the effects of institutions governing what cabinets do after they form. Laver and Shepsle have made a good start by taking into account the rules associated with cabinet decision making, but much is left to be done in this area. For example, one could explore the effects of rules involving legislative influence on policy making or of rules (such as confidence procedures) governing the termination of cabinets.

　　Finally, we now have some reason to believe that controlled statistical analysis is not going to "knock out" either of the main theoretical contenders for explaining coalition formation—size and ideology or institutions and norms. Furthermore, we find support for various models within each of these general theoretical camps. This leaves us with the question of whether a single theory of coalition formation exists that is consistent with all these empirical findings. While we present this as a chal-

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[24]Warwick (1996) included VSP and MSP variables in his analysis of the selection of the formateur and found that VSP was statistically significant and dampened the effect of median status. His interpretation of these results, however, was essentially negative because the size of the effect was small.

lenge to theorists, our own opinion is that researchers have overemphasized the differences in coalition theories and have been slow to recognize their compatibilities. Coalition formation is a complex political outcome that is no doubt the result of variously motivated politicians bargaining in institutionally rich environments. Like blind men, each touching different parts of the same elephant, each of the existing theories of government formation focuses on only part of the whole picture and thus has only limited explanatory power. We have made progress. Indeed, when we take all the theories as a group, we have at least explored much of the elephant. The challenge now is to integrate that knowledge into a single coherent theory. What is clear from our analysis is that such an integrative theory will necessarily allow for multiple kinds of institutions and multiple goals for politicians. Although the intricacy of such models has stymied previous integrative efforts, we are encouraged by the very recent work of some formal theorists, such as Baron and Diermeier (1999), who have put forward relatively simple models that nonetheless include both office and policy motivations and explicitly model both the coalition-bargaining process and post-coalition policy making in an institutionally complex environment.

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