

A Step in the Wrong Direction: An Appraisal of the Zero-Intelligence Model of Government Formation

LANNY W. MARTIN Rice University
GEORG VANBERG Duke University

In a recent article in the Journal of Politics, Golder, Golder, and Siegel (2012) argue that models of government formation should be rebuilt “from the ground up.” They propose to do so with a “zero-intelligence” model of government formation. They claim that this model makes no theoretical assumptions beyond the requirement that a potential government, to be chosen, must be preferred by all its members and a legislative majority to the incumbent administration. They also claim that, empirically, their model does significantly better than existing models in predicting formation outcomes. We disagree with both claims. Theoretically, their model is unrestrictive in terms of its institutional assumptions, but it imposes a highly implausible behavioral assumption that drives the key results. Empirically, their assessment of the performance of the zero-intelligence model turns on data that are of limited relevance in testing coalition theories. We demonstrate that the predictions of the zero-intelligence model are no more accurate than random guesses, in stark contrast to the predictions of well-established approaches in traditional coalition research. We conclude that scholars would be ill-advised to dismiss traditional approaches in favor of the approach advanced by Golder, Golder, and Siegel.

The formation of governments in multiparty democracies is one of the most important and widely studied topics in comparative research. Scholars have identified four central forces that affect government formation: the size of a potential government, the ideological compatibility of its members, the institutional features of coalition bargaining, and the performance of government incumbents. In a recent article, Golder, Golder, and Siegel (GGS) attack this line of work, arguing that “neither the assumptions nor the predictions of the current theoretical approach correspond closely to the empirical findings” (2012, 428). They contend that “real world” government formation is not subject to rigid bargaining protocols as (some) game-theoretic models of coalition bargaining have assumed. Moreover, they note that most theoretical models cannot account for the full range of

observed government types. For instance, coalition theories that conceive of the payoffs as a fixed prize (such as cabinet portfolios) cannot easily explain minority or oversized governments. GGS propose to address the perceived inadequacy of standard approaches by “modeling government formation from the ground up” (443). To do so, they advance a “zero-intelligence” model, which they claim does significantly better than existing models in predicting formation outcomes.²

We applaud the effort of GGS to push the theory of government formation forward. Models of government formation should be empirically relevant, and we share their skepticism regarding the bargaining protocols underpinning some game-theoretic models of coalition bargaining. Despite these points of agreement, we believe that GGS are mistaken in

¹An online appendix with supplemental analyses is available at <http://dx.doi.org/10.1017/S0022381614000474>. Data and replication materials will be made available upon article publication at <http://www.ruf.rice.edu/~lmartin/>.

²GGS are vague about their target. Their broad language appears directed at the large literature that most coalition theorists would consider the “traditional approach,” such as the seminal works of Riker (1962), Axelrod (1970), De Swaan (1973), Strøm (1990), and Laver and Schofield (1990). On a narrow reading, they are attacking the game-theoretic literature that originated with Baron and Ferejohn (1989). Even within this tradition, later models predict many of the phenomena that GGS are concerned about, including surplus majority and minority cabinets, delay in formation, and proportionality in portfolio allocation (e.g., see Baron and Diermeier 2001; Diermeier, Eraslan, and Merlo 2003; Morelli 1999).

their assessment of the state of coalition theory. More importantly, we believe that the alternative approach they propose—which comes very close to making coalition selection a random process—is a step in the wrong direction. Theoretically, their model is unrestrictive in terms of its *institutional* assumptions, but it imposes a highly implausible *behavioral* assumption that drives the key results. Empirically, their assessment of the performance of the zero-intelligence model relies on data that are of limited relevance for testing coalition theories, and they commit an ecological fallacy in evaluating the strength of their predictions. We briefly discuss these issues and then demonstrate that traditional models of government formation—contrary to the claims of GGS—vastly outperform the zero-intelligence model. Indeed, the predictions from the GGS model are statistically no better than those of random chance. We conclude that scholars would be ill-advised to dismiss traditional approaches in favor of the zero-intelligence model.

The Zero-Intelligence Model

In parliamentary systems, there is always an incumbent government in place. Given the requirement to survive votes of confidence, this implies a fundamental constraint on government formation: Any government that is formed must be preferred to the incumbent by (1) all parties that participate in the proposed government and (2) a set of parties that jointly control a majority of legislative seats. The goal of GGS's analysis is "to abstract away from the exact details of the bargaining process" and examine how this constraint shapes government formation (2012, 428).

To do so, they investigate a model of m parties competing in a two-dimensional space. Parties are randomly assigned policy positions, which then generate seat weights from the "votes" of N nonstrategic proximity voters. Parties care about office (their share of portfolios) and policy (the divergence between their ideal point and the government's policy position).³ Given the distribution of policy positions and seat weights, the government formation process proceeds as follows:

³Specifically, given a share of portfolios cs_i and ideal point z_i , the utility of party i for a government with policy position x is given by $u_i(cs_i, x) = cs_i + \beta(x - z_i)^2$, where $\beta \in [0, 1]$ is the weight placed on policy payoffs.

- 1) Each party proposes a government (chosen randomly from the set of potential governments of which it is a member), along with a policy position, and a distribution of portfolios;
- 2) Each party compares its utility from the incumbent government to the utility of each proposed government. A proposed government is "viable" if it is preferred to the incumbent by (1) all of its members and (2) a set of parties that jointly control a majority of seats;
- 3) One of the viable proposed governments is chosen at random to replace the incumbent;
- 4) If no proposed government is viable, the process reverts to stage (1), and if no replacement government is formed after 100 attempts, the incumbent government remains in office.

To investigate the empirical implications of their model, GGS perform a simulation in which they generate 50,000 party systems and 2,500 government formations per system. This provides them with simulated data on the types of governments that are formed, the distribution of portfolios, and the number of bargaining rounds. A central measure they use to evaluate their model against traditional approaches is the distribution of government types (single-party majority, minimal winning coalition, minority coalition, single-party minority, and surplus majority). Most traditional approaches do not predict *all* of these types within the same model. In contrast, GGS's zero-intelligence model predicts that *all* government types form. Moreover—and this is the key piece of evidence they adduce in support of their model—the aggregate distribution of government types in postwar Europe corresponds reasonably closely to the aggregate distribution that emerges out of their simulations (2012, 436, Table 1).⁴ The conclusion GGS draw is that, counter to traditional approaches that place a primary emphasis on "behavior" (i.e., the preferences of party elites over office and policy), "structure, not behavior, may be the most important thing when it comes to explaining government formation outcomes" (2012, 443). We disagree.

⁴This is only true when simulations are weighted to place emphasis on simulated party systems that have similar numbers of effective parties as "real-world" party systems. Of course, other weighting schemes (e.g., ones that consider party positioning) might be at least as plausible; however, GGS do not discuss alternative weighting schemes, nor do they offer a strong defense of their particular weighting approach.

TABLE 1 Aggregate Distribution of Government Types in the Zero-Intelligence Model

Government Type	Proportions Occurring in:		
	Actual Cases	Zero-Intelligence Model	Random Chance
Minimal Winning Coalition	125 (39.4%)	40 (12.9%)	43 (13.6%)
Minority Coalition	45 (14.2%)	125 (40.3%)	116 (36.6%)
Single-Party Minority	74 (23.3%)	90 (29.0%)*	42 (13.2%)
Surplus Majority	73 (23.0%)	55 (17.7%)*	116 (36.6%)

Note: * $p < 0.05$ from z-test comparing zero-intelligence model proportions to random chance proportions.

The Necessity of a Selection Assumption

A central contention by GGS is that the zero-intelligence model makes “no additional assumptions” beyond the requirement that a viable government must be preferred by all its members and a legislative majority to the incumbent. As a result, they argue, their model sheds light on whether *this constraint alone* is “sufficient to generate empirically realistic predictions about the types of governments that form . . .” (2012, 443). Unfortunately, this claim does not stand up to close scrutiny. In fact, the model relies on an (implicit) additional assumption that drives the central results. In this section, we examine the theoretical significance of this assumption. In the next section, we demonstrate that the assumption is not only theoretically suspect but also results in empirical predictions that are statistically no more accurate than random guesses.

In most bargaining situations, there are *many* potential governments that are viable in the sense of being preferred to the incumbent. As a result, the central task for any theory of government formation is to discriminate *among* potential governments and to identify those that are more likely to emerge. Doing so requires an assumption about the process by which one of the viable governments is selected. The key assumption in the zero-intelligence model is that this selection process is *random*. Recast as a statement about the behavior of the party elites who bargain over government formation, this implies that their preferences play only a very limited role. They are used to compare the utility of each proposed government to the incumbent, but viable governments are *not* compared to each other. In other words, GGS’s random selection is equivalent to a radical behavioral assumption: *Party leaders have*

preferences over alternative governments and the incumbent, but they have no preferences among alternative viable governments. This assumption drives the aggregate results on which GGS rely in their empirical tests. Given random selection, *any* proposed government that can beat the incumbent has a chance of being formed. The only factor that “discriminates” against particular government types is the frequency with which they can beat an incumbent. It is thus not surprising that GGS’s model produces a full range of governments.

In contrast, a bedrock assumption of traditional approaches is that party leaders have preferences *among* the various governments that could be formed. And if party leaders have preferences among alternative governments, some government types will be more difficult to explain: even if a government is preferred to the incumbent, it may be *less* preferred than another government that could be formed. For example, in models in which parties are assumed to prize office highly, a surplus majority government may be preferred by all its members to an incumbent; but this surplus majority government contains a minimal winning coalition that is also preferred to the incumbent *and that all its members prefer to the surplus majority government*. In short, the factor that “discriminates” against certain types of governments in traditional coalition theory are the preferences of party elites *among* alternative governments that could be formed. GGS eliminate this factor by making the assumption that party elites have no preferences among alternative governments and are content to compare proposed cabinets only against the incumbent.

In short, GGS argue that their model makes no additional assumptions beyond the need for a new government to “beat” the incumbent and that—as a consequence—“the outcomes we observe are truly a function of the institutional details that we know to exist” (2012, 443). This is false. Any model of

government formation must make an assumption about the process by which one of many possible viable governments is selected. Just like preference-based approaches, random selection represents a particular behavioral assumption. The GGS approach “buys” the ability to predict the full range of government types by doing away with traditional assumptions about purposive party behavior and substituting in their place the alternative assumption that party leaders have no preferences among competing potential coalitions. The claim that the zero-intelligence model relies solely on minimalistic institutional assumptions—and no behavioral ones—is therefore misleading.

The Empirical Performance of the Zero-Intelligence Model

The behavioral assumption imposed by GGS is not only theoretically suspect. It also has significant implications for the empirical performance of their model. Consider which data are relevant in assessing the performance of theories of government formation. A key piece of evidence on which GGS rely is the aggregate distribution of government types over many simulated bargaining situations. On first examination, the correspondence between the distribution produced by their simulation and real-world averages is impressive. Upon reflection, however, the relevance of these data is less apparent. The purpose of theories of government formation is not to predict the *aggregate distribution* of government types. Rather, it is to help us understand *which specific governments* are more or less likely to emerge *in particular bargaining situations*. Thus, in assessing the usefulness of competing models, the data that are most relevant allow us to compare the governments that are predicted to form to the governments that actually form. Simply put, what we want to know is which theories are better able to explain the governments that emerge in the real world. And in this respect, traditional approaches vastly outperform the zero-intelligence model.

In this section, we show that while GGS’s model produces an aggregate distribution of government types that looks “realistic,” this does not result from the model’s ability to accurately capture the outcomes of individual bargaining situations. In fact, applied to real-world coalition bargaining, the model fails to correctly identify the government that forms almost 95% of the time. This disjuncture between the aggregate-level and microlevel predictions suggests that GGS have committed a common ecological

fallacy. The predictive failure of their model in real-world bargaining situations is not especially surprising, given their strong behavioral assumption. While choosing governments virtually at random will naturally lead to a distribution that includes every type of government, by assuming away the preferences of party elites over alternative governments, the zero-intelligence model is bound to have a difficult time making correct predictions. In contrast, as we also show in this section, traditional theories—because they incorporate the preferences of party elites over alternative governments—have an impressive ability to predict which governments will emerge in particular bargaining situations.

To evaluate the empirical performance of the zero-intelligence model, we examine 317 bargaining situations (in which no single party controlled a majority of legislative seats) in 17 European parliamentary democracies.⁵ The data set consists of information on all potential governments that could have formed in each bargaining situation and an indicator for the potential government that was chosen. It also contains information on party seat weights and policy positions on the left-right socio-economic scale (as calculated by the Comparative Manifestos Project). For each bargaining situation, we employ the “multiple-round, simultaneous random offer” structure of the GGS model. Each party proposes a potential government that includes itself, along with a randomly chosen portfolio allocation and policy position (and a randomly chosen weight indicating the importance of policy payoffs). If at least one proposed government is viable, then one of the viable governments is chosen at random.⁶ If no proposal is viable, a new round of proposals is initiated. If no government has been selected at the end of 100 rounds, the current incumbent remains in office. This procedure provides us with a “prediction” by the

⁵The bargaining situations are from Austria (1949–2003), Belgium (1946–2003), Denmark (1945–2009), Finland (1945–2003), France (1959–2002), Germany (1949–2009), Great Britain (1974–2010), Greece (1989), Iceland (1946–2006), Ireland (1951–2008), Italy (1946–2006), Luxembourg (1945–99), Netherlands (1946–2003), Norway (1961–2001), Portugal (1976–2009), Spain (1977–2008), and Sweden (1948–2010). In addition to excluding situations in which a single party controlled a legislative majority (which coalition theories are not designed to explain), the sample excludes cases in which nonpartisan governments were formed and where there was missing information on government party policy positions.

⁶We must make an assumption regarding the policy position of the incumbent. Specifically, we assume that the position of the incumbent is given by the seat-weighted average of the positions of its members (Martin and Vanberg 2014; McDonald, Mendes, and Budge 2004; Powell 2000, 2006).

zero-intelligence model. This prediction is either (1) a randomly selected viable government or (2) the incumbent government if the selection process ended (at round 100) because a viable replacement was not proposed.

How well does the zero-intelligence model do? In Table 1, we provide the aggregate distribution of government types that actually occurred in the 317 government bargaining situations and the aggregate distribution as predicted by the zero-intelligence model. Clearly, the GGS approach predicts a full range of government types, although (as with the unweighted simulated data in their article) it substantially overpredicts the number of minority coalitions and substantially underpredicts the number of minimal winning coalitions.⁷ After presenting the predictions of the zero-intelligence model for the distribution of government types, the natural next step for GGS would have been to compare these predictions to what would have been predicted by random chance. They chose not to perform such a test, but we do so in Table 1. In any given bargaining situation, the probability that a single random draw from the set of potential coalitions will produce a government of a particular type is simply the number of potential coalitions of that type in the bargaining situation divided by the total number of potential coalitions in the bargaining situation. For each of the four government types in Table 1, we calculate the probability of drawing that type in every bargaining situation and then sum these probabilities across all bargaining situations. This produces the expected number of governments of each type given a completely random selection process. Using a *z*-test, we assess whether the proportions predicted by the zero-intelligence model are statistically different from those predicted by chance. Of the four types of governments, GGS predict significantly better than chance for only two: single-party minority and surplus majority governments. For minimal winning and minority coalitions, the predictions by GGS are no better than predictions resulting from a completely random draw of potential governments.

Of course, aggregate data are ultimately not the most relevant for assessing the empirical success of models of government formation, since the predictions of these theories are at the micro level. For such an

⁷There are 310 predictions for the GGS model because they predict the incumbent (at round 100) in seven instances in which no incumbent exists (which can happen, for example, if one of the incumbent parties from the previous government is not present in the subsequent legislature). They handle such a possibility by assuming that the position of the incumbent is the median voter's policy and that the portfolio shares for all parties equal zero.

assessment, we need to know how well a model does in predicting the governments that actually formed. At this level, the success of the zero-intelligence model is quite modest. The model correctly identifies the party composition of 51 governments. Of these, 13 are randomly chosen alternatives to the incumbent, while 38 are incumbent governments that remain in place at the end of the 100 iterations because no viable alternatives were proposed. Overall, this represents a success rate of roughly 16%.

Importantly, even this modest success rate overstates the predictive power of the zero-intelligence model. Recall that there are two ways in which GGS make a government prediction. The first is that a set of viable governments is proposed, and one of these is chosen at random to replace the incumbent. These are the model's "replacement predictions." The second is that an incumbent government remains in place if no viable government has been proposed within 100 iterations. These are the "status quo predictions." As indicated above, the vast majority of correct predictions are status quo predictions. Critically, all of these are a direct result of the arbitrary number of iterations set for the simulations. In the zero-intelligence model, *any* incumbent government can be beaten by another government. This is due to the fact that potential replacements can adopt the same policy position as the incumbent. In this case, for any policy weight β , parties are indifferent between the incumbent and the proposed alternative in terms of policy payoffs. As a result, bargaining becomes a "divide the dollar" game over cabinet portfolios. Under majority rule with no majority party, such a game has an empty core—any coalition can be beaten by some other coalition. The implication of this fact is that *if the number of iterations in the simulation is sufficiently high, every incumbent government will be replaced under the zero-intelligence model*. Thus, if we allow for a greater number of iterations, the number of correct "status quo predictions" will decline.⁸

We demonstrate this point in Table 2. As the number of iterations is increased from 100 to 500, the number of correctly predicted incumbent governments falls from 38 to 14. At the same time, the total number

⁸It is tempting to think that 100 iterations is sufficient to produce a viable alternative. Recall, however, that parties not only propose a government, but also a portfolio allocation and a government policy. In a five-party legislature, for example, there are only 31 potential governments ($2^5 - 1$), but even for a cabinet of only 15 ministries, there are over 30 billion possible ways to distribute portfolios across the full set of potential party compositions (5^{15}). Further, policy proposals are drawn from a continuous space, making the number of possible proposals infinite. In this light, 100 iterations is actually quite low.

TABLE 2 Microlevel Predictions in the Zero-Intelligence Model

Number of Iterations	Number of Correct Predictions			
	Status Quo Predictions	Replacement Predictions	Total Predictions	Random Chance
100	38 (12.3%)	13 (4.2%)	51 (16.5%)*	10 (3.2%)
500	14 (4.4%)	12 (3.8%)	26 (8.2%)*	10 (3.2%)
5,000	3 (0.9%)	21 (6.6%)	24 (7.6%)*	10 (3.2%)
10,000	0 (0%)	17 (5.4%)	17 (5.4%)	10 (3.2%)

Note: * $p < 0.05$ from z-test comparing proportion of total correct predictions from the zero-intelligence model to proportion of correct predictions from random chance.

of correct predictions from the model is cut almost in half, falling from 51 to only 26. Increasing the number of iterations to 5,000, we see the number of correctly predicted incumbents fall from 14 to 3. Finally, by 10,000 iterations, every incumbent government is replaced by some proposed alternative. With the removal of these incumbent “predictions”—which, as should now be apparent, were mere artifacts of the arbitrarily low number of stipulated iterations—the total number of correct predictions from the zero-intelligence model is only 17 out of 317 (a success rate of only 5.4%). As a baseline comparison, if we were to randomly draw a single potential government from the set of all potential governments in each bargaining situation, we would expect to draw the government that actually formed 10 times (a success rate of 3.2%).⁹ As we indicate in the table, without the artificially correct status quo predictions, the proportion of correct predictions from the zero-intelligence model is not significantly different from the proportion produced by a completely random process. In short, in declaring their model an empirical success, GGS have committed an inferential fallacy. While the overall distribution of government types predicted by their model bears some similarity to real-world averages, this obviously does not translate into predictive success at the micro level. The traditional approaches they attack do quite a bit better.¹⁰

⁹For example, in a six-party legislature, there are 63 potential governments, so the probability of randomly selecting the government that formed is $\frac{1}{63}$. Summing the probabilities of randomly selecting the formed government across all bargaining situations produces the expected number of correctly predicted governments.

¹⁰In addition to focusing on government types, GGS also examine bargaining delay and portfolio allocation for their predicted governments. We do not focus on these outcomes here because it is unclear how to interpret an analysis of the characteristics of predicted governments that are so fraught with the difficulties we have identified.

To assess the success of traditional approaches, we turn to recent study of government formation by Martin and Stevenson (ms: 2010). MS evaluate several arguments from the rich literature on coalition politics. Some scholars predict that coalitions will be chosen on the basis of size-related factors, such as whether they control a legislative majority or are minimal winning (Gamson 1961; Riker 1962; von Neumann and Morgenstern 1953), contain a small number of parties (Leiserson 1968), or contain the largest party (Peleg 1981; van Deemen 1989). Others highlight the role of policy-related factors, such as whether coalitions consist of ideologically compatible parties (Axelrod 1970; De Swaan 1973), contain the median party (Laver and Schofield 1990) or parties with antiestablishment views (Budge and Keman 1990), or (for potential minority governments) whether they face an ideologically divided opposition (Laver and Schofield 1990). Some focus on the impact of constraints on coalition bargaining, such as the presence of an investiture rule, a continuation rule, or preformation electoral or exclusionary pacts (Diermeier and van Roozendaal 1998; Strøm 1990; Strøm, Budge, and Laver 1994). Finally, a fourth set of theories highlights the importance of incumbency, arguing that incumbents may be more or less likely to reenter government depending on their history of working well together and their recent electoral performance (Franklin and Mackie 1983; Martin and Stevenson 2010; Tavits 2008; Warwick 1996). This body of scholarship represents the set of models GGS believe we should “rethink” and rebuild “from the ground up.” We estimate the MS model for the current sample (see the online appendix). Taking the government with the highest predicted probability of forming, the MS model generates a correct prediction in 137 out of 317 instances, a success rate of over 43%. Given that the median number of

potential coalitions in the sample is slightly more than 1,000, this success rate is quite remarkable.¹¹ Certainly, the “traditional” coalition theories as operationalized in the MS model vastly outperform the GGS model in predicting which governments actually form in particular bargaining situations.

Conclusion

The approach proposed by GGS is a clear step in the wrong direction. The zero-intelligence model makes an implausible behavioral assumption that drives the key results. Consequently, the model does *not* demonstrate that structure trumps behavior in explaining formation outcomes—the implicit behavioral assumption is critical to the predictions. Moreover, GGS rely on data that are of limited usefulness in evaluating theories of coalition formation, and they commit an ecological fallacy in assessing the success of their model. Finally, in sharp contrast to the impressive track record of the traditional approaches GGS attack, the predictions of the zero-intelligence model are no more accurate than random guesses. In short, scholars would be ill-advised to reject existing coalition theory in favor of the zero-intelligence model.

References

- Axelrod, Robert. 1970. *Conflict of Interest*. Chicago: Markham.
- Baron, David P., and Daniel Diermeier. 2001. “Elections, Governments, and Parliaments in Proportional Representation Systems.” *Quarterly Journal of Economics* 116 (3): 933–67.
- Baron, David P., and John A. Ferejohn. 1989. “Bargaining in Legislatures.” *American Political Science Review* 83 (4): 1181–206.
- Budge, Ian, and Hans Keman. 1990. *Parties and Democracy: Coalition and Government Functioning in Twenty States*. Oxford: Oxford University Press.
- De Swaan, Abram. 1973. *Coalition Theories and Cabinet Formations: A Study of Formal Theories of Coalition Formation Applied to Nine European Parliaments after 1918*. Amsterdam: Elsevier Scientific.
- Diermeier, Daniel, Hülya Eraslan, and Antonio Merlo. 2003. “A Structural Model of Government Formation.” *Econometrica* 71 (1): 27–70.
- Diermeier, Daniel, and Peter van Roozendaal. 1998. “The Duration of Cabinet Formation Processes in Western Multi-Party Democracies.” *British Journal of Political Science* 28 (4): 609–26.
- Franklin, Mark N., and Thomas T. Mackie. 1983. “Familiarity and Inertia in the Formation of Governing Coalitions in Parliamentary Democracies.” *British Journal of Political Science* 13 (3): 275–98.
- Gamson, William A. 1961. “A Theory of Coalition Formation.” *American Sociological Review* 26 (3): 373–82.
- Golder, M., S. N. Golder, and D. A. Siegel. 2012. “Modeling the Institutional Foundation of Parliamentary Government Formation.” *Journal of Politics* 74 (2): 427–45.
- Laver, Michael, and Norman Schofield. 1990. *Multiparty Government: The Politics of Coalition in Europe*. Oxford: Oxford University Press.
- Leiserson, Michael. 1968. “Factions and Coalitions in One-Party Japan: An Interpretation Based on the Theory of Games.” *American Political Science Review* 62 (3): 770–87.
- Martin, Lanny W., and Georg Vanberg. 2014. “Parties and Policymaking in Multiparty Governments: The Legislative Median, Ministerial Autonomy, and the Coalition Compromise.” *American Journal of Political Science*. Forthcoming.
- Martin, Lanny W., and Randolph T. Stevenson. 2010. “The Conditional Impact of Incumbency on Government Formation.” *American Political Science Review* 104 (3): 503–18.
- McDonald, Michael, Silvia Mendes, and Ian Budge. 2004. “What are Elections For? Conferring the Median Mandate.” *British Journal of Political Science* 34 (1): 1–26.
- Morelli, Massimo. 1999. “Demand Competition and Policy Compromise in Legislative Bargaining.” *American Political Science Review* 93 (4): 809–20.
- Peleg, Bazalel. 1981. “Coalition Formation in Simple Games with Dominant Players.” *International Journal of Game Theory* 10 (1): 11–33.
- Powell, G. Bingham. 2000. *Elections as Instruments of Democracy: Majoritarian and Proportional Visions*. New Haven, CT: Yale University Press.
- Powell, G. Bingham. 2006. “Election Laws and Representative Governments: Beyond Votes and Seats.” *British Journal of Political Science* 36 (2): 291–315.
- Riker, William. 1962. *The Theory of Political Coalitions*. New Haven, CT: Yale University Press.
- Strøm, Kaare. 1990. *Minority Government and Majority Rule*. Cambridge: Cambridge University Press.
- Strøm, Kaare, Ian Budge, and Michael J. Laver. 1994. “Constraints on Cabinet Formation in Parliamentary Democracies.” *American Journal of Political Science* 38 (2): 303–35.
- Tavits, Margit. 2008. “The Role of Parties’ Past Behavior in Coalition Formation.” *American Political Science Review* 102 (4): 495–507.
- van Deemen, A. M. A. 1989. “Dominant Players and Minimum Size Coalitions.” *European Journal of Political Research* 17 (3): 313–32.
- von Neumann, I., and O. Morgenstern. 1953. *Theory of Games and Economic Behavior*. Princeton, NJ: Princeton University Press.
- Warwick, Paul V. 1996. “Coalition Government Membership in West European Parliamentary Democracies.” *British Journal of Political Science* 26 (4): 471–99.

¹¹Further, where the MS model does not predict the actual government as having the *highest* probability of forming, its probability of forming is often among the highest. It has the first or second highest probability in 185 bargaining situations (58% of the cases), and one of the top three in 211 situations (67% of the cases).

Lanny Martin is an Associate Professor in the Department of Political Science at Rice University, Houston, TX 77005.

Georg Vanberg is a Professor in the Department of Political Science at Duke University, Durham, NC 27708.