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# Bargaining Delays in the Government Formation Process

## Sona N. Golder[1]

## Abstract

In parliamentary democracies, the transfer of power from one government to the next is sometimes characterized by long periods of negotiations in which party leaders bargain over the composition and policy objectives of a new cabinet. Although these delays can have substantial political and economic consequences, surprisingly little is known about their determinants. Moreover, the few studies that exist reach contradictory conclusions. In this article, the author examines how factors relating to uncertainty and bargaining complexity influence the duration of the government formation process in 16 West European countries from 1944 to 1998. In line with the article's theoretical expectations, the author finds that factors increasing uncertainty over the type of cabinet that is acceptable always lead to delays in forming governments but that factors increasing bargaining complexity, such as the number of parties and ideological polarization in the legislature, only do so when there is sufficient uncertainty among political actors. The present analysis helps to resolve the contradictory findings in the literature.

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## Introduction

The legislative elections held in Belgium on June 10, 2007, were followed by the longest delay in forming a new government in Belgian history. As is usual, the king appointed an *informateur* to gather information and report back on a suitable *formateur* who would then manage the actual government formation process. The nonpartisan king was kept unusually active appointing numerous informateurs and formateurs as negotiations over possible coalitions repeatedly failed. An interim cabinet was finally sworn in by the king at the end of December 2007, fully 194 days after the election initially took place.[1] During the intervening months without a duly constituted government, the outgoing prime minister, Guy Verhofstadt, had remained in office in a caretaker capacity. The caretaker status of his government meant, for all practical purposes, that it was "unable to take policy decisions."[2] Most countries, Belgium included, have a strong norm that caretaker governments, which rule while the next government is being formed, do not have the authority to make major policy initiatives (Laver & Shepsle, 1994); they should simply maintain the status quo. What this means is that delays in the government formation process can be quite problematic, particularly if the previous cabinet left office in the midst of some sort of political, economic, or military crisis. Indeed, after nearly 6 months of a caretaker government, a warning from the European Commission that the sustained political crisis was having a damaging effect on the Belgian economy sparked large public protests. According to widespread media reports at the time, the government formation crisis even prompted some Belgians to think seriously about whether their country should simply cease to exist, splitting along linguistic lines into Wallonia and Flanders.[3]

While the length of time that it took to form the most recent government in Belgium was record setting for that country, significant delays in forming governments are not rare. It is simply part and parcel of most parliamentary systems that election results do not regularly determine the identity of the government and that instead, they usher in what can be quite long periods of negotiation in which party leaders bargain over the composition and policy objectives of the cabinet. But what factors account for the delay in the government formation process? Why do cabinets in some countries

form quite quickly but take weeks or even months in others? As the Belgium example illustrates, these delays are not inconsequential and can have important implications for democratic governance.

Perceived government legitimacy can easily be undermined in these lengthy bargaining situations, either because a caretaker government without a mandate is implementing policy or because a caretaker government is not taking action and this inaction is seen as undermining the public interest. For a recent example of this, consider the 7-month delay in forming a government that followed the legislative elections in the Czech Republic in June 2006. By August, the Czech media were reporting on the deleterious consequences of the prolonged period under a caretaker government:

> Law makers are getting nothing done, while legislation and important reforms rest in a state of limbo, including long awaited pension reform, the privatization of many state-owned companies, an overhaul of the country's Criminal Code and the fate of the controversial flat tax. A nonfunctioning Parliament costs taxpayers as much as 3 million Kč ($136,550) a day. (Alda, 2006)

A new Czech government, with Mirek Topolanek as prime minister, finally passed an investiture vote on January 19, 2007—fully 229 days after the legislative elections had originally taken place.[4]

A number of recent empirical studies point to additional problems caused by protracted government transition periods, finding that uncertainty over the government formation process affects exchange rate markets (Bernhard & Leblang, 2002), stock market volatility (Leblang & Mukherjee, 2005), and the types of assets in which market actors choose to invest (Bernhard & Leblang, 2006). Other studies have shown that the length of time or the number of bargaining rounds that it takes to form a cabinet can influence government stability and survival (King, Alt, Burns, & Laver, 1990; Laver & Schofield, 1998; Strøm, 1985; Warwick, 1994). All in all, delays in government formation and the uncertainty that surrounds the future direction of government policy can have quite serious consequences on the behavior of economic and political actors, both domestic and international (Martin & Vanberg, 2003).

Despite the vast literature that exists on various aspects of the formation of parliamentary cabinets, it is somewhat surprising that there have been only two published cross-national studies focusing on bargaining delays in the government formation process (Diermeier & van Roozendaal, 1998; Martin & Vanberg, 2003).[5] Not only are there few studies in this

area, but the results that have been produced so far are somewhat inconsistent. For example, Diermeier and van Roozendaal (1998) argue that factors relating to bargaining complexity should have no effect on government bargaining delays, whereas Martin and Vanberg (2003) argue that they should increase delays. Both sets of scholars find empirical evidence to support their conflicting expectations. In addition, the findings from Martin and Vanberg are open to question due to methodological problems relating to the inclusion of variables that do not correctly match the unit of analysis.[6]

In this article, I reexamine the factors that influence how long it takes for a cabinet to form using a new data set from the Parliamentary Democracy Data Archive (PDDA) covering democratic periods in 17 West European countries from 1944 to 1998 (Müller & Strøm, 2000; Strøm, Müller, & Bergman 2003).[7] My theoretical approach allows me to reconcile the contradictory results in the literature. I find that factors increasing uncertainty about the cabinet offers that are acceptable to the relevant political actors always lead to longer government formation processes. However, factors increasing bargaining complexity, such as the number of parties and ideological polarization in the legislature, only increase delays when there is sufficient uncertainty among the political actors.

In the next section, I briefly summarize the government formation process in parliamentary democracies and provide descriptive statistics on how long it takes to form a government in the countries that form the focus of my analysis. In the third section, I discuss the role that uncertainty about acceptable cabinet proposals and bargaining complexity play in the government formation process. In contrast to the debate in existing studies, which typically seeks to discern whether uncertainty *or* bargaining complexity is the root cause of delays, I argue that they both matter. Specifically, I claim that whereas increased uncertainty should always lead to delays, bargaining complexity only matters (or matters more) when party leaders are already uncertain. In the fourth section, I outline my hypotheses and illustrate how previous empirical analyses are flawed for using cabinet-specific factors to explain what is often a multiround government formation process. I present my model and interpret its results in the fifth and sixth sections, respectively.

## Delays in Government Formation in Western Europe

The process of forming a parliamentary government that enjoys a legislative majority can be complex (Laver & Schofield, 1998). In the most typical

variant of this process, while it is the head of state who presides over the government formation process and who ultimately invests a government with the constitutional authority to take office, it is the job of the formateur to construct the government.[8] Exactly how the formateur is chosen varies from country to country, though it is normally the case that the initial formateur is the leader of the largest legislative party. Once chosen, the formateur must construct a government that enjoys the support of a legislative majority. This typically requires allocating ministerial portfolios and setting out basic policies that the government intends to pursue. If the party of the formateur does not control a legislative majority, then the formateur must bargain about these matters with the leaders of other parties. Even if the party of the formateur does control a legislative majority, he or she may still have to bargain about these matters, this time with internal party opponents.

During these bargaining processes, it is not uncommon for the formateur to fail to form a coalition on the first or even the second attempt. As an example, it took seven different coalition proposals more than 106 days for a government to form after the 1979 Belgian legislative elections (De Winter, Timmermans, & Dumont, 2000). If no agreement is reached, a different formateur might be appointed and a new attempt to form a government begins. Once a cabinet has finally been formed, the support of a legislative majority may or may not have to be demonstrated by a formal investiture vote. If an investiture vote is unsuccessful, then the government formation process starts all over again; there may or may not be a new election before this happens. However, if the investiture vote is successful (or there is no required vote), then the head of state simply appoints the cabinet nominated by the formateur to office. At this point, the government is free to rule until it is defeated in a vote of no confidence or until a new election is necessary.

In Table 1, I provide descriptive information about the length of time that this government formation process takes in the 17 countries in the PDDA data set. The length of time that it takes a government to form is measured as the number of days between the election or resignation of the previous government and the day on which the new government is officially inaugurated. In the first column, I present descriptive data on all governments (excluding nonpartisan governments). In the next two columns, I distinguish between the first government to form following an election (postelection governments) and subsequent governments that form before the next election (interelection governments).

There are two striking features in these data. The first is the considerable cross-national variation in the length of time that it takes to form a government. Although it takes about a week (6.5 days) on average for a

**Table 1.** Descriptive Data on the Duration of the Government Formation Process

| Country | All | | Postelection | | Interelection | |
|---|---|---|---|---|---|---|
| | M | N | M | N | M | N |
| Austria | 37.0 | 22 | 50.4 | 16 | 1.2 | 6 |
| Belgium | 37.8 | 33 | 61.4 | 16 | 15.6 | 17 |
| Denmark | 8.3 | 31 | 9.4 | 22 | 5.6 | 9 |
| Finland | 26.9 | 44 | 53.1 | 15 | 13.3 | 29 |
| France (5th Republic) | 2.2 | 23 | 3.5 | 11 | 1.0 | 12 |
| Germany | 20.2 | 26 | 36.9 | 13 | 3.4 | 13 |
| Greece | 6.5 | 11 | 8.1 | 7 | 3.5 | 4 |
| Iceland | 32.8 | 26 | 40.4 | 16 | 20.6 | 10 |
| Ireland | 15.7 | 22 | 18.1 | 16 | 9.33 | 6 |
| Italy | 29.1 | 51 | 47.3 | 14 | 22.2 | 37 |
| Luxembourg | 24.1 | 16 | 31.2 | 12 | 3.0 | 4 |
| Netherlands | 70.6 | 22 | 85.6 | 15 | 38.6 | 7 |
| Norway | 4.2 | 26 | 2.5 | 14 | 6.1 | 12 |
| Portugal | 22.6 | 11 | 24.0 | 7 | 20.0 | 4 |
| Spain | 28.4 | 8 | 23.7 | 6 | 42.5 | 2 |
| Sweden | 5.4 | 26 | 6.1 | 16 | 4.5 | 10 |
| United Kingdom | 6.5 | 20 | 9.21 | 14 | 0.2 | 6 |
| All | 23.0 | 418 | 31.3 | 230 | 12.3 | 188 |

Data come from the Parliamentary Democracy Data Archive (Müller & Strøm, 2000; Strøm, Müller, & Bergman, 2003) and cover governments that formed between 1944 and 1998. Bargaining duration measures the number of days between the election or resignation of previous government and the day on which the new government is officially inaugurated.

cabinet to form in the United Kingdom and even less in France, Norway, and Sweden, it takes well over 2 months (70.6 days) for them to form in the Netherlands. The second striking feature is the considerable difference in the length of time that it takes to form a government after an election compared to forming one between elections. With the exception of Norway and Spain, postelection governments always take longer on average to form than interelection ones. Specifically, postelection governments take about a month (30.9 days) to form compared to less than 2 weeks (12.5 days) for interelection governments.[9] This difference suggests that it may be inappropriate to treat both types of government formation process—postelection and interelection—as though they were the same. This point is further emphasized by evidence that our theories relating to who gets into

government have much greater explanatory power for postelection forma-
tion opportunities than they do for interelection ones (Golder, 2006). The
distinction between postelection and interelection governments is one that
I will return to later.

I should note however that the two types of government formation pro-
cesses are quite similar in one respect: The first coalition proposal fails
around 30% of the time in both postelection and interelection formation
processes. More precisely, 31% of postelection and 28% of interelection
government formation processes require multiple bargaining rounds.
Although one might think to argue that the shorter delays in interelection
periods can be explained away by assuming that interelection governments
are only brought down when some of the party leaders have already agreed
on an alternative government, the similarity in the number of cases with
failed bargaining rounds suggests that this is not the primary explanation for
the difference in the length of the government formation process in post-
and interelection periods.

## Uncertainty and Bargaining Complexity

Existing studies attempt to explain delays in the government formation pro-
cess in terms of either uncertainty or bargaining complexity. *Uncertainty*
here refers to not knowing the preferences over policy and office of all the
political actors whose agreement might be necessary to form a govern-
ment.[10] *Bargaining complexity* refers to things such as the number of
different potential government proposals, both in terms of the allocation of
ministerial portfolios and in terms of future government policy, as well as
the number of politically relevant actors who have to agree on the proposed
government. To some extent, it seems that scholars have tried to explicitly
determine whether it is uncertainty *or* bargaining complexity that is the root
cause of delays in the government formation process. For example, Dier-
meier and van Roozendaal (1998) argue that delays are caused by
uncertainty *rather than* by bargaining complexity, whereas Martin and Van-
berg (2003) side primarily with bargaining complexity over uncertainty. I
believe that these attempts to frame the debate in terms of uncertainty
versus bargaining complexity are theoretically misleading. In the follow-
ing, I argue that both uncertainty and bargaining complexity matter, but in
a conditional way. To foreshadow, I argue that uncertainty will always
affect delay, whereas bargaining complexity only matters when the level of
uncertainty is sufficiently high.

Diermeier and van Roozendaal (1998) set the initial framework for the discussion about bargaining delays by making a clear distinction between the effects of uncertainty versus bargaining complexity on the duration of the government formation process. Their starting point is the prediction from game-theoretic models of bargaining under conditions of complete information that rational actors will strike bargains immediately. Once the assumption of complete information is relaxed, it is possible to get bargaining delays. In the government formation context, incomplete information or uncertainty might be about what government policy and ministerial portfolios would constitute an acceptable offer to all other actors whose agreement is necessary to form the new government. If a formateur does not know which policy areas are open for negotiation or the minimum number of portfolios that a potential partner would be willing to live with, he or she could easily concede more than is necessary, both in terms of office and policy.[11] To avoid giving up more than is strictly required to reach an agreement on forming a new government, actors are expected to use repeated offers and counteroffers as a way of eliciting information about the terms of the best available offer. This logic leads Diermeier and van Roozendaal to conclude that any factors that increase uncertainty over the composition of acceptable offers should lead to longer delays in government formation. Conversely, any factors about which there is complete information should have no effect on delays. The trick, then, is in finding which factors affect uncertainty and which do not. Diermeier and van Roozendaal claim that because there is no uncertainty about the bargaining environment itself, factors that affect its complexity, such as the number of legislative parties, should have no effect on the length of the government formation process.[12]

The problem is that although Diermeier and van Roozendaal (1998) are correct to say that there is no uncertainty about the bargaining environment itself, for example, all actors know how many legislative parties there are, it seems reasonable to think that factors increasing the complexity of the bargaining environment would make it harder for the relevant party elites to elicit the information that they need to make a government proposal acceptable to a legislative majority. Consider the number of legislative parties. The formateur is not particularly interested in knowing whether there are four, five, or six parties in the legislature. What he or she wants to know is the basic outline of an acceptable government cabinet. However, eliciting the information necessary to produce such a cabinet will probably take longer when there are many potential government partners. As coalition

scholars have noted since at least the 1960s, higher levels of legislative fragmentation are likely to be associated with lower certainty of information on the part of party leaders (Groennings, 1970; Rae, 1967). As Dodd (1976) puts it,

> [A] party leader attempting to follow the various possible bargaining moves made by other parties is faced with a difficult and, in highly fractionalized situations, a virtually impossible task. . . . In estimating the relative strength of parties, any given party leader must observe the internal party relations of each party, or at least must feel that he would be aware of serious internal conflicts. In a parliament consisting of only three relevant parties, a party leader could well assume that he possessed reliable information as to the internal behavior of the other two parties. By contrast, in a parliament of ten relevant parties, a party leader would face a more difficult task. (pp. 63-64)

To gain the information necessary to make an acceptable cabinet proposal when legislative fragmentation is high, the formateur is likely to have to negotiate with many potential coalition partners and the number of offers and counteroffers may well be quite high. Assuming that it takes time to make and evaluate offers and counteroffers (something that bargaining models implicitly assume when they include multiple bargaining rounds), legislative fragmentation should lead to longer delays in forming governments. Consider the following description of the formation process in Austria following the 1983 parliamentary elections.

> The president entrusted the SPÖ [Social Democratic Party] nominee with the official government formation task. The SPÖ aimed at a coalition with the FPÖ [Freedom Party] but started negotiations with both the ÖVP [People's Party] and the FPÖ. . . . Both the ÖVP and the FPÖ tried to improve their position vis-à-vis the SPÖ through parallel talks with each other. These were cancelled by the FPÖ, however, once it realized that the SPÖ was serious about forming a government with the FPÖ. (Müller, 2000, p. 97)

In this example, the parties involved in the government formation process tried to negotiate a better deal by signaling their willingness (real or simulated) to end negotiations and form a government with a different partner. It took some time (there were a number of offers and counteroffers) before the FPÖ "realized that the SPÖ was serious." Only

after this back and forth did the FPÖ have a reasonably clear idea of the best offer that it could receive from the SPÖ and therefore the ability to evaluate it against the expected utility of trying to form a government with the ÖVP. Had there been fewer potential government partners in Austria at this time, it seems likely that the government formation process would have taken less time.

Note the causal logic here. Like Diermeier and van Roozendaal (1998), I accept the central insight from bargaining models that uncertainty is the primary driving force behind delays in the government formation process. Without uncertainty, formateurs should be able to form governments immediately, irrespective of whether the bargaining environment is complex or not—they will immediately know all that is necessary to make a cabinet proposal that is acceptable to a legislative majority. It follows from this that bargaining complexity should have no effect when there is no uncertainty. However, in contrast to Diermeier and van Roozendaal, I believe that bargaining complexity does matter when there is uncertainty; specifically, it should increase government bargaining delays in such circumstances. The reason is that it should take longer for political actors engaged in the government formation process to obtain the information that they are uncertain about when the bargaining environment is complex than when it is not. Thus, my central hypothesis is that uncertainty should always lead to delays in forming governments but that bargaining complexity should only do so when there is sufficient uncertainty among the political actors. The previous studies of delays in the government formation process have not recognized or tested the conditional way in which bargaining complexity should matter. This may explain their inconsistent findings regarding the role that bargaining complexity and uncertainty play in the government formation process.

## *Main Theoretical Hypotheses*

- Increasing uncertainty about the minimum offer of government posts and policy that is acceptable to potential cabinet partners will make delays in government formation more likely regardless of the level of complexity in the bargaining environment.
- Although bargaining complexity should not affect the length of time that it takes a government to form when there is no uncertainty, it should lead to increasing delays in the government formation process as uncertainty increases.

## Testable Implications

To test my theoretical predictions, it is necessary to come up with factors that capture uncertainty and bargaining complexity. Note that these factors should reflect the entirety of the government formation process because this is the unit of analysis here—the number of days that it takes a government to form. I emphasize this point because some of the existing studies examining delays in government formation inappropriately include factors that are specific to the cabinet that is proposed in the final round of bargaining, such as the number of parties involved and their ideological positions (Golder, 2006; Martin & Vanberg, 2003). In fact, Martin and Vanberg (2003) incorrectly criticize Diermeier and van Roozendaal (1998) for *not* including such cabinet-specific variables in their analysis. To see why including these cabinet-specific variables is problematic and why the results from the studies that include them are open to question, consider the aftermath of the 1948 Belgian elections. The first three attempts to form a government failed. Although the successful (fourth) proposal was a two-party coalition, it is not at all clear what this number of parties can tell us about the complexity of the entire government formation process. Likewise, even if we knew something about the ideological diversity of the coalition members that ultimately formed the government, such a measure could not be used to characterize the full formation process, which included a variety of alternative coalitions.[13] This is not to say that cabinet-specific factors do not affect the duration of the entire government formation process; they probably do, but only through their effect on the duration of each round of bargaining. The problem is that each round of bargaining is not the unit of analysis here or in any of the previous studies of government formation delays.[14] It is for this reason that the forthcoming analysis focuses only on factors that characterize the entire government formation process.

### *Uncertainty*

Like all previous studies, I argue that a central factor determining the degree of uncertainty in the government formation process has to do with whether this process takes place after an election (more uncertainty) or in an inter-election period (less uncertainty). Following an election, the party composition in the legislature is different, parties may have new platforms, and there may be membership turnover within the parties. As Diermeier and van Roozendaal (1998) argue, party leaders are likely to learn about which

policies are feasible for potential government cabinets and which would likely lead to their breakup through their day-to-day negotiations over legislative proposals. As a result, party leaders should be less certain about which potential cabinets are acceptable to a legislative majority right after an election than after an extended period of legislative interaction. De Winter (1995) makes a similar case when he notes that in postelectoral bargaining situations,

> This type of formation is usually more time-consuming, as winning parties make new demands, losers need some time to heal electoral wounds and to psychologically overcome defeat. In addition, elections can render certain well-preferred coalition formulae mathematically impossible, thereby leaving only second choice or previously rejected formulae available to parties. The adjustment of parties, especially of the rank and file, to such undesirable coalitions can also consume some time. In principle, the breakdown of a governing coalition that does not provoke general elections does not face similar problems. (p. 121)

These arguments are entirely consistent with the empirical evidence that I presented earlier in Table 1 that postelection governments take considerably longer to form than interelection period ones. Thus, with the argument that I presented in the previous section, I have the following hypothesis:

> *Hypothesis 1:* Governments take longer to form after elections than in interelection periods irrespective of how complex the bargaining environment is.

## Bargaining Complexity

There are several factors that affect the bargaining complexity of the government formation process. Although there is no uncertainty about these factors per se, they should increase the length of time that it takes to gather the necessary information to construct a cabinet with legislative majority support when there is uncertainty. In effect, factors that increase bargaining complexity are expected to increase delays in government formation so long as there is some uncertainty. It is likely that there will be some degree of uncertainty whether governments form after elections or in interelection periods. The key is that there should be *more* uncertainty after elections. Thus, I expect factors that increase bargaining complexity to have either no

significant effect or less effect on the length of time that it takes to form a government in interelection periods compared to after elections.

Two obvious factors that should affect bargaining complexity are the number of parties in the legislature and the ideological polarization of these parties (Diermeier & van Roozendaal, 1998; Golder, 2006; Strøm & Müller, 1999). The connection between bargaining complexity and the number of parties has already been discussed in some detail previously. Ideological polarization increases complexity because it makes it more likely that a formateur has to bargain with at least one party that does not hold similar positions on several different types of policy. That is, the farther apart two parties are on the standard left-right dimension, the more they are likely to have divergent preferences in a variety of policy areas. Although neither the number of parties or their ideological polarization should lead to bargaining delays under complete information, they both generate the kind of bargaining complexity that makes it difficult for formateurs to be certain of the best offer that would be acceptable to potential government partners. Thus, I have the following two hypotheses:

> *Hypothesis 2:* An increase in the effective number of legislative parties will increase the length of time that it takes to form a government after an election; it will have no effect or less of an effect in interelection periods.
> *Hypothesis 3:* An increase in ideological polarization in the legislature will increase the length of time that it takes to form a government after an election; it will have no effect or less of an effect in interelection periods.

Previous scholars have also argued that investiture requirements are likely to affect bargaining complexity (Diermeier & van Roozendaal, 1998; Martin & Vanberg, 2003). For example, Diermeier and van Roozendaal (1998) argue that investiture requirements increase bargaining complexity because the necessity to craft a cabinet that commands a legislative majority will, on average, require formateurs to gather more information about the other parties in the legislature. A better theoretical distinction though is between formation processes that are characterized by *positive parliamentarism* and those that are characterized by *negative parliamentarism* (Bergman, 1995). Positive parliamentarism requires that a proposed cabinet wins the explicit support of a majority of legislators before it can take office, whereas negative parliamentarism requires only that an absolute majority of legislators does not vote against it.[15] The task of forming a government should be less complex if the potential cabinet simply needs to avoid

provoking a majority of legislators from voting against it rather than getting a majority to vote for it.

> *Hypothesis 4:* The need to explicitly obtain the support of a legislative major-ity (positive parliamentarism) will increase the length of time that it takes to form a government after an election; it will have no effect or less of an effect in interelection periods.

Some notes of caution are in order regarding Hypothesis 4. Some scholars have suggested that investiture rules really only cause problems for the formation of minority governments (De Winter, 2003; Strøm, 1990). Put differently, positive parliamentary rules should only add to bargaining complexity when a minority cabinet is trying to take office—proposed government cabinets that control a legislative majority should have no problem passing an investiture vote. If a formateur is attempting to form a minority government but needs the explicit support of a majority of legislators to do so, he or she will be more likely to spend some time negotiating with opposition party members to develop a set of government policies that will encourage these parties to support the new government (De Winter, 1995). The problem is that the minority-majority status of the proposed government is a cabinet-specific attribute and cannot therefore be included in the analysis here because my unit of analysis is the entire government formation process. While I believe that there is good reason to expect that investiture rules only contribute to bargaining complexity, and hence to delays in government formation, for minority governments, I still test Hypothesis 4. I do so for two reasons. First, it might be possible to find at least a weak effect of positive parliamentarism among the full sample of cases even if this rule only contributes to delays when a proposed minority government is being debated. Second, the inclusion of this variable makes my analysis more directly comparable with earlier studies.

## Control Variables

In the upcoming analysis, I control for continuation rules and the presence of a majority party. In some countries, the incumbent government is not required to resign even if elections are held; rather, they can remain in office and can make the first proposal for the new government. Diermeier and van Roozendaal (1998) refer to this feature as "continuation" and note that it "shortens the time needed to select a proposer . . . [and] also allows the

incumbent cabinet to start negotiations while still in office, since it is common knowledge that it will be the proposer" (p. 621). For these reasons, Diermeier and van Roozendaal expect countries with a continuation rule to have shorter negotiation processes than those countries without such a rule. Martin and Vanberg (2003) employ a similar argument to justify controlling for the use of continuation rules as well.

As with continuation rules, one would expect that government formation processes that involve a majority party would be shorter than those that do not. This is because the majority party does not have to negotiate with other parties to take office.[16] Of course, this does not necessarily mean that single-party majority governments will form immediately. The leader of the majority party may need to discuss issues of portfolio allocation with factions within his or her own party and it is not unusual for a party with a majority to form an oversized coalition with other parties. In fact, the majority party does not enter government alone about 20% of the time in my sample. However, even in cases where the majority party decides to form a surplus majority government, one would expect delays in the government formation process to be smaller than cases where there is no majority party because the majority party can credibly make take-it-or-leave-it offers. This claim is supported by the legislative bargaining model proposed by Baron and Ferejohn (1989), which suggests that allowing amendments (or counteroffers, in the context of the government formation process examined here) rather than take-it-or-leave-it offers increases the likelihood of delay in reaching agreement. Thus, I have the following two hypotheses:

*Hypothesis 5:* The use of continuation rules will reduce the length of time that it takes to form a government.
*Hypothesis 6:* The presence of a majority party will reduce the length of time that it takes to form a government.

## Model and Data

I test my hypotheses using survival (event history) analysis. The central concept in survival analysis is the hazard function or hazard rate, *h(t)*. This is the probability that an event will occur at a particular point in time given that the event has yet to occur. In terms of the analysis here, the event in question is the formation of a government. The hazard rate has two components. The first is a set of covariates that are hypothesized to systematically

affect the timing of an event. The second is the baseline hazard function that indicates the rate of event occurrence when all the covariates are zero; namely, the baseline hazard reflects how the rate of event occurrence changes with time only. The hazard rate typically has the following form: $h(t|x) = h_0(t)e^{x\beta}$ where $h_0(t)$ is the baseline hazard rate and $x\beta$ in this particular case is specified as

$$
\begin{aligned}
\text{Formation Duration} = {}& \beta_1 \text{ Postelection} + \beta_2 \text{ Legislative Parties} \\
& + \beta_3 \text{ Ideological Polarization} + \beta_4 \text{ Positive Parliamentarism} \\
& + \beta_5 \text{ Legislative Parties} \times \text{Postelection} \\
& + \beta_6 \text{ Ideological Polarization} \times \text{Postelection} \\
& + \beta_7 \text{ Positive Parliamentarism} \times \text{Postelection} \\
& + \beta_8 \text{ Continuation Rule} + \beta_9 \text{ Majority Party} \qquad (1)
\end{aligned}
$$

In the following analysis, I employ a Cox survival model that allows me to estimate the effect of the covariates on the hazard rate without requiring me to specify a particular parametric form for the baseline hazard.[17] Individual and global tests of the Schoenfeld residuals indicate that the proportional hazard assumption underlying the Cox model is not violated in the fully specified model outlined previously (Box-Steffensmeier & Jones 2004; Box-Steffensmeier & Zorn, 2001).

Unless otherwise stated, data to test my hypotheses come from the Parliamentary Democracy Data Archive and cover 16 countries in Western Europe from 1944 to 1998.[18] The dependent variable, formation duration, measures the number of days between either an election or the resignation of the previous government and the day on which the new government is officially inaugurated.[19] Postelection is a dichotomous variable that equals 1 if a government is the first to form after an election (more uncertainty) and 0 if it forms in an interelection period (less uncertainty). Around 58% of the governments in my sample were the first government to form after elections.

The variables capturing bargaining complexity are measured as follows. Legislative parties measures the effective number of parties in the parliament. This variable is calculated as $1/\Sigma s_i^2$, where $s_i$ is the percentage of legislative seats won by the *ith* party (Laakso & Taagepera, 1979). The effective number of parties ranges from 1.99 (the United Kingdom in 1959) to 8.4 (Belgium in 1992). Ideological polarization measures the level of ideological polarization in the legislature. It is calculated as $K \sum_{i=1}^{n} \sum_{j=1}^{n} \Pi_i^{\alpha+1} \Pi_j |y_i - y_j|$, where *n* is the number of parties, $\Pi_i$ is the size

of party $i$, $y_i$ is the ideological position of party $i$, $K$ is a constant (and is therefore not important here), and $\alpha$ is a parameter that can take on values between $(0, \alpha*)$.[20] In a detailed theoretical analysis, Esteban and Ray (1994) show that this particular measure of polarization is better able to capture our commonsense notions of polarization than any other measure. As a result, I prefer to use this measure of ideological polarization rather than the percentage of the vote for "extremist" parties as in Diermeier and van Roozendaal (1998) and Martin and Vanberg (2003). Positive parliamentarism is a dichotomous variable that equals 1 if a new government requires the explicit support of a legislative majority to take office and 0 otherwise (Bergman, 1995). The interaction terms in Equation 1 are included to test the conditional hypothesis that factors increasing bargaining complexity will lead to longer delays in the government formation process when there are higher levels of uncertainty.

In terms of the control variables, continuation rule is a dichotomous variable that equals 1 if the outgoing government or formateur gets the first opportunity to form a new government and 0 otherwise.[21] Majority party is a dichotomous variable that equals 1 if a single party controls a majority of the legislative seats and 0 otherwise. This is not a typical event in Western Europe and only occurs in 16% of the formation opportunities in my sample.

## Results and Interpretation

The results from four slightly different models are shown in Table 2. I first report results from an additive model that pools all government formations and includes a dichotomous variable for postelection status (Model 1). This is the typical specification found in the existing literature. For presentational purposes and to ease interpretation, I then show results from additive models where I split the sample into postelection governments (Model 2) and interelection governments (Model 3). In Model 3, individual tests of the Schoenfeld residuals indicated that the assumption of proportional hazards was violated for three of the covariates (legislative parties, positive parliamentarism, and continuation rule). In other words, the assumption that each of these covariates has a proportional effect on the hazard rate that is invariant over time is violated. To correct for nonproportional hazards in this particular model, I follow standard practice and add interaction terms between each of the "offending covariates" and the natural logarithm of time (measured as bargaining days; Box-Steffensmeier & Jones, 2004,

**Table 2.** Determinants of the Duration of Government Bargaining Delays

| | (1) All Formations | | (2) Postelection Period (High Uncertainty) | | (3) Interelection Period (Low Uncertainty) | | (4) All Formations Interaction Model | |
| | Dependent Variable: Number of Days Needed to Form a Government | | | | | | | |
| Independent Variables | Cox Proportional Hazards Estimate | Robust SE | Cox Proportional Hazards Estimate | Robust SE | Cox Proportional Hazards Estimate | Robust SE | Cox Proportional Hazards Estimate | Robust SE |
|---|---|---|---|---|---|---|---|---|
| Uncertainty | | | | | | | | |
| Postelection | −0.94** | .12 | | | | | 1.03 | .72 |
| Bargaining complexity | | | | | | | | |
| Legislative parties | −0.26** | .06 | −0.47** | .08 | −0.09 | .15 | −0.09 | .09 |
| Ideological polarization | −1.01** | .32 | −1.92** | .38 | 0.20 | .53 | 0.13 | .61 |
| Positive parliamentarism | 0.24 | .13 | 0.41* | .17 | −0.18 | .31 | 0.37 | .21 |
| Interaction terms | | | | | | | | |
| Legislative Parties × Postelection | | | | | | | −0.29* | .11 |
| Ideological Polarization × Postelection | | | | | | | −1.62* | .63 |
| Positive Parliamentarism × Postelection | | | | | | | −0.20 | .23 |

*(continued)*

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# Table 2. (continued)

|  | (1) All Formations | | (2) Postelection Period (High Uncertainty) | | (3) Interelection Period (Low Uncertainty) | | (4) All Formations Interaction Model | |
|---|---|---|---|---|---|---|---|---|
| Independent Variables | Cox Proportional Hazards Estimate | Robust SE | Cox Proportional Hazards Estimate | Robust SE | Cox Proportional Hazards Estimate | Robust SE | Cox Proportional Hazards Estimate | Robust SE |
| Controls | | | | | | | | |
| Continuation rule | 1.67** | .16 | 2.62** | .24 | 0.77** | .28 | 1.74** | .18 |
| Majority party | 0.72** | .17 | 0.68** | .20 | 0.44** | .19 | 0.73** | .16 |
| Time interaction terms | | | | | | | | |
| Legislative Parties × ln(Time) | | | | | −0.16** | .02 | | |
| Ideological Polarization × ln(Time) | | | | | −0.29** | .06 | | |
| Positive Parliamentarism × ln(Time) | | | | | −0.20** | .06 | | |
| Log likelihood | −1,791.9 | | −918.4 | | −510.1 | | −1,798.3 | |
| Observations | 383 | | 226 | | 157 | | 383 | |

Dependent Variable: Number of Days Needed to Form a Government

The Efron method is employed for handling ties. Data are based on cabinets from the 16 countries (excluding France) shown in Table 1 between 1944 and 1998.

*p < .05. **p < .01. (two-tailed)

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p. 136). Finally, I present results from the full interactive model shown in Equation 1 (Model 4).

In all four models, the coefficients are expressed as proportional hazard estimates. As a result, a positive coefficient indicates that the covariate in question increases the hazard rate or, more relevantly, reduces the length of time that it takes to form a government. Conversely, a negative coefficient implies that the covariate reduces the hazard rate or delays the formation of a government. The results from all four models strongly support my main predictions.

First, consider the effect of uncertainty on the government formation process. The negative and significant coefficient on postelection in Model 1 indicates that increasing uncertainty leads to longer delays in forming governments even when controlling for the complexity of the bargaining environment. Although this is entirely consistent with Hypothesis 1, we need to look at the results from Model 4 to determine whether uncertainty leads to delays in the government formation process *irrespective* of the complexity of the bargaining environment. The positive (though not significant) coefficient on postelection would seem to indicate that if anything, increased uncertainty actually reduces the amount of time that it takes a government to form. However, it is important to recognize that due to the inclusion of the interaction terms, this coefficient only tells us the effect of increased uncertainty when there are no legislative parties, no ideological polarization, and no positive parliamentary rules. Because there are no real-world observations where this is the case, this coefficient is essentially meaningless. Arguably, the formation opportunity with the lowest observed level of bargaining complexity in my sample occurred in the United Kingdom in 1959 when the effective number of parties was just 1.99. The results from Model 4 indicate that increasing uncertainty—going from an interelection period to a postelection period—in such a scenario does significantly increase the amount of time that it takes to form a government, as predicted. Specifically, the odds that a government in this scenario forms in a particular moment in a postelection period are 76% lower (53%, 91%) than in an interelection period.[22] Overall, there is compelling evidence for Hypothesis 1 that increased uncertainty always leads to delays in government formation irrespective of the complexity of the real-world bargaining environment.

Second, consider the effect of bargaining complexity on the government formation process. The results in Model 1 provide evidence that factors increasing bargaining complexity, such as the number of parties and ideological polarization in the legislature, lead to delays in forming governments.

Recall, though, that I expect factors increasing bargaining complexity only to matter (or to matter more) in postelection periods. As a result, it is necessary to compare the effect of factors increasing bargaining complexity in interelection periods (Model 2) to their effect in postelection periods (Model 3). As predicted in Hypotheses 2 and 3, increasing the number of parties and ideological polarization in the legislature leads to longer delays in the government formation process in the postelection period. This can be seen from the fact that both the size and statistical significance of the coefficients on legislative parties and ideological polarization are considerably smaller in the interelection period than in the postelection one. Further confidence that the effect of increasing the number of parties and ideological polarization in the legislature really does differ across postelection and interelection periods comes from the interactive model (Model 4) where the coefficients on Legislative Parties × Postelection and Ideological Polarization × Postelection are both negative and strongly significant. In substantive terms, the results in Model 4 indicate that whereas increasing the effective number of legislative parties by one in an interelection period does not significantly alter the odds that a government will form, a similar increase will reduce the hazard rate (i.e., lead to delays) by 31% (22%, 39%) in a postelection period. Similarly, whereas increasing the level of polarization by one unit has no significant effect on the odds of government formation in an interelection period, the same increase will lead to a 76% (58%, 88%) decrease in the hazard rate in a postelection period. It is important to note that these significant differences between interelection and postelection periods are entirely obscured in previous studies that only estimate additive models similar to Model 1 in Table 2.

Whereas the results regarding legislative parties and ideological polarization strongly support my theoretical expectations regarding the impact of bargaining complexity on the government formation process, the same is not exactly true for positive parliamentarism. The fact that positive parliamentarism does not have a significant effect in interelection periods (the coefficient on positive parliamentarism is insignificant) and that the coefficient on the interaction term is negative in Model 4 is entirely consistent with Hypothesis 4. The problem is that the coefficient on the interaction term is not sufficiently large or significant to support the claim that positive parliamentarism leads to delays in the government formation process in postelection periods. Overall, the evidence from Model 4 would seem to suggest that positive parliamentarism never affects the amount of time that it takes a government to form. However, one should not be too hasty about

drawing this conclusion based purely on the analysis conducted here. As I noted earlier, there is good theoretical reason to think that positive parliamentary rules should only lead to bargaining delays when a minority government tries to take office (Strøm, 1990). Unfortunately, it is not possible to distinguish between majority and minority governments here because the minority-majority status of the potential government is a cabinet-specific characteristic that does not apply directly to the whole government formation period. Thus, although my results appear somewhat inconsistent with the literature's stated hypothesis regarding positive parliamentarism, they do not rule out the possibility that positive parliamentary rules lead to increased delays in government formation when the proposed cabinet is a minority one.

What about the control variables? As predicted, the positive coefficients on continuation rule in all four models indicate that governments always form more quickly when there is a continuation rule—when the incumbent government gets the first opportunity to form the government—irrespective of whether the formation process takes place in an interelection or postelection period. Also as predicted, the positive coefficients on majority party indicate that governments always form more quickly when there is a majority party in the legislature.

## Conclusion

Parliamentary democracies around the world exhibit considerable variation regarding the length of time that is required to form a new government. Some governments take days to form, others weeks, and still others months. This variation in the amount of time that it takes to form a government is seen both within and across countries. Although there is considerable research to suggest that delays in forming a new government can have quite negative economic and political consequences for many actors, the existing literature on government formation includes very few studies examining these delays. Those studies that do exist come to contradictory conclusions about the determinants of bargaining delays. One of the advantages to the argument that I present here is that it is able to reconcile the different theoretical approaches taken in the literature and explain the inconsistent findings.

Formal models of bargaining suggest that delays in forming governments should not occur under conditions of complete information but may occur under conditions of uncertainty. Building on these insights, I argue that uncertainty about what type of government proposal will be acceptable

to all of the relevant political actors is likely to lead to delays in forming a government. While I believe that factors increasing uncertainty are the driving force behind delays in government formation, I claim that the complexity of the bargaining environment should exacerbate these delays by making it harder for political actors to obtain the information required to make an acceptable cabinet proposal. In effect, factors increasing the complexity of the bargaining environment have a conditional effect on bargaining delays—they increase delays when there is uncertainty but have no effect when there is complete information. The conditionality of my argument suggests that previous studies are theoretically misleading in the sense that they attempt to explain bargaining delays either in terms of bargaining complexity *or* uncertainty.

Using a newly available data set of 16 Western European countries and correcting for several methodological problems that call into question the results of some earlier studies, I find support for my central hypotheses. Uncertainty, as measured by the postelection status of the formation period, increases bargaining delays even after controlling for the complexity of the bargaining environment. Bargaining complexity, as measured by the effective number of legislative parties and their ideological polarization, increases delays when uncertainty is high (postelection periods) but less so or not at all when uncertainty is low (interelection periods). This is exactly as predicted.

These results help us to make better sense of the considerable delay plaguing the government formation process that recently occurred in Belgium. The attempts to form a Belgian government took place after an election, a time when there is likely to be increased uncertainty about the type of cabinet proposal that would be acceptable to the relevant political actors. The fact that the Belgian legislature was characterized both by many parties and an unusually high level of ideological polarization (a key issue was the sharp differences between the two main linguistic communities regarding policy proposals to increase regional autonomy) meant that the bargaining environment was extremely complex. As a result, obtaining information about what would constitute an acceptable government would have been very difficult. The fact that there was no majority party would only have increased the length of time that it took to form a government.

The analysis that I conduct here suggests two obvious areas for future research. First, there is good theoretical reason to suspect that cabinet-specific variables such as the number of parties in the proposed government, their ideological polarization, their majority status, and their

possible participation in a preelectoral coalition affect the duration of the government formation process. However, it has been impossible to evaluate these theoretical arguments here because the unit of analysis—as with all previous studies—has been the duration of the entire government formation process. By collecting data on the duration of each round of the government formation process, it would be possible to test these hypotheses. Second, by separating out postelection and interelection formation opportunities, my results show that there are real differences between these situations. Using a pooled model and including only a dummy variable for postelection status, as previous studies have done, obscures these differences. For example, while the results from the pooled model in Table 2 look similar to those from the postelection model, they look very different to those from the interelection model. These differences suggest that we might find it useful to disaggregate postelectoral and interelectoral government formation processes more often.

My analysis also has some broader implications for the growing debate on how we evaluate majoritarian and proportional (or consensus) visions of democracy (Lijphart, 1999; Powell, 2000). There are multiple criteria with which to compare these two types of democracy—majoritarian democracies are characterized by a concentration of power, high levels of accountability, and strong mandates, whereas proportional democracies are characterized by a dispersion of power, greater ideological congruence between citizens and policy makers, and the representation of multiple points of view in a series of shifting policy coalitions. In the majoritarian vision, elections decisively identify a majority party, who, presumably, ought to be able to take office quickly. In the proportional vision, elections are not decisive for policy making; rather, as many citizens' preferences as possible should be taken into account when forming governments in proportional democracies, and thus the bargaining process will be more complex. In other words, longer delays in government formation are to be expected in consensus democracies compared to majoritarian ones. As we have seen from the previous empirical analysis, small party systems and, ideally, single-party majorities, which are typical of majoritarian systems, lead to shorter delays. As the number of parties expands and the various points of view that need to be reflected in policy making multiply, as in a typical consensus-style system, we see longer delays. Although neither Powell (2000) nor Lijphart (1999) addressed delays in the government formation process, these delays are an immediate consequence of the elements of the two visions of democracy that they describe. As a result, when weighing the trade-offs inherent in each vision of democracy, as we must when we

design new institutions or revise old ones, we should also consider the costs associated with the likelihood of protracted bargaining periods and caretaker governments along with the other factors that characterize each type of democracy.

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## Declaration of Conflicting Interests

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## Notes

1. This particular cabinet is only an "interim government" in that its members agreed ahead of time to step down after 3 months (in March 2008). With no end in sight to the government formation process, the Belgian king appears to have applied pressure on party leaders to reach an agreement so that important legislation, in particular a budget for 2008, could be passed.
2. See Belgian Stage Big Protest Rally. (2007, December 15). *The BBC News*. Retrieved from http://news.bbc.co.uk/2/hi/europe/7146094.stm on December 17, 2007.
3. Information taken from a variety of sources (e.g. *Le Soir, Le Monde*, *The New York Times, The BBC News,* and *The Economist*). References are available from the author upon request.
4. Topolanek had first formed a government in September of 2007, but it was short-lived; after failing to pass the investiture vote, the cabinet was forced to step down.
5. Although De Winter (1995) and Golder (2006) also discuss delays in the government formation process, both analyses are restricted to postelection governments only. See also a recent chapter by De Winter and Dumont (2008) that appeared after the final version of this article was submitted.

6.  Similar methodological problems exist in Golder (2006).
7.  This new data set is the result of collaboration over several years between a number of political scientists, all of whom are experts on the institutions and governments of particular West European countries (Bergman, Müller, & Strom, 2005). Unlike most data sets commonly used by government coalition scholars, the Parliamentary Democracy Data Archive (PDDA) data use the date of a government resignation as the end date of the incumbent government rather than simply choosing the day prior to the constitution of the next government. For instance, imagine a government that resigns on April 1, staying on in a caretaker capacity until a new government forms and takes office on June 1. While the PDDA data would reveal the 2-month gap between these duly constituted governments, other data sets would record the first government as leaving office on May 31. The fact that many government formation scholars use data that do not explicitly measure the gap between the end of one government and the beginning of the next is likely an important explanation for why there are so few studies examining the length of time it takes new governments to form. Diermeier and van Roozendaal (1998, p. 617) make a similar critique of most existing data sets.
8.  The precise details of how governments form vary from country to country. Whereas the head of state directly appoints the *formateur* in some countries, he or she appoints an *informateur* (advisor) to recommend a formateur in others. In still other countries, the bargaining process is better characterized as "freestyle bargaining" among the political parties in the legislature.
9.  A difference in means test shows that we can reject the null hypothesis that the average duration is equal in the two election contexts (with $\alpha = .001$).
10. This is similar to the definition adopted by Huber and McCarty (2001) in their discussion of bargaining over legislative policy: "Political uncertainty refers to the lack of information that party leaders often have about the precise policies that other participants in the governing coalition will support on the floor of the parliament" (p. 345).
11. According to Lupia and Strøm (2007), patience is a virtue when bargaining in cases where uncertainty is present. A formateur may "lack information about what other parties want or what sacrifices they are willing to make in exchange for coalition membership. In such cases, parties may try to strengthen their bargaining position by overstating their walk-away values (e.g., to insist that you will settle for nothing less than ministries X, Y, and Z when, in fact, you would be satisfied with two of the three). Therefore, a key to bargaining under uncertainty is separating fact from fiction when assessing other parties' walk-away values" (pp. 20-21).

12. Diermeier and van Roozendaal (1998) support their assertion by noting that they are unaware of any rational choice models showing that factors such as the number of legislative parties affect the length of cabinet negotiations. However, the fact that such a model might not (currently) exist is not compelling evidence that bargaining complexity has no effect on delays.

13. Diermeier and van Roozendaal (1998) are very careful on this point and specifically focus their analysis on only those factors that were unrelated to the characteristics of the parties involved in negotiations. They note that "care has to be exercised in using the concept of cabinet formation. First, there is a difference between a cabinet formation attempt, and a cabinet formation process. Cabinet formation attempts refer to one particular sequence of negotiations. . . . A formation process, however, lasts until a new cabinet is installed. The formation process may thus be composed of a sequence of formation attempts, with possible different parties as negotiators and different *formateurs*" (p. 615).

14. It would be appropriate to include cabinet-specific variables in an analysis of delays in the government formation process if all governments formed after one round of bargaining. However, this is not empirically the case. Governments that formed following one or more inconclusive bargaining attempts comprise nearly a third of the formation processes in my sample. Note that it would probably be a mistake to include cabinet-specific variables in one's analysis but restrict the sample to only those governments that formed in the first round of bargaining due to the strong possibility of selection bias.

15. The precise rules governing investiture votes vary from country to country (Bergman, 1993). These distinctions are further discussed in Bergman, Müller, Strøm, and Blomgren (2003, pp. 148-152).

16. Studies of government formation often exclude cases where a single party controls a majority in the legislature. However, I prefer to retain this additional information by including them and controlling for the effect of the presence of a single party with majority status.

17. The results from a generalized gamma model indicate that commonly employed parametric survival models such as the exponential, Weibull, log-normal, and gamma are all inappropriate for estimating the model outlined in Equation 1.

18. It was necessary to omit France in the upcoming analysis due to missing data on ideological polarization.

19. Observations in the PDDA data set where the government forms within a single day are coded as a 0. The score of 0 is simply an artifact of the choice to measure the duration of the government formation process in days rather than hours or minutes. To prevent these observations from being dropped from the empirical analysis, I have recoded them as 0.01. The choice of 0.01 is not consequential; these observations could be recoded with any positive value less

than 1 because the Cox model only uses information on the order in which governments form and not the actual length of time that it takes them to form.

20. As Esteban and Ray (1994) recommend, α is set equal to 1.6. The overall polarization measure comes from Indriðason (2006), who uses several expert surveys to calculate the party positions.

21. Data for this variable come from Diermeier and van Roozendaal (1998). Of the four countries in my data set that are not in Diermeier and van Roozendaal (Greece, Portugal, Spain, and the United Kingdom), only the United Kingdom has this feature (Bogdanor, 1995).

22. The 95% confidence intervals are shown in parentheses and were calculated via simulation using 10,000 draws from the estimated coefficient vector and variance-covariance matrix.

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