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Abstract	The literature on cabinet formation duration has traditionally revolved around two fundamental explanatory drivers: uncertainty and complexity of the bargaining environment. While the role of these factors in the cabinet formation process is well-established, little can be said about their impact on bargaining delays under different institutional settings, such as unicameral vs. bicameral legislatures. In this chapter, we contribute to this literature by investigating whether the effect of uncertainty and complexity on bargaining delays is conditional on the parliamentary structure in which negotiations take place. Our analysis of about 700 government formation processes in 28 European countries highlights that the impact of uncertainty and complexity on the duration of government negotiations is stronger in bicameral systems than in unicameral parliaments.
Keywords (separated by “ - ”)	Government formation duration - Bicameralism - Institutions - Uncertainty - Complexity

Uncertainty, Complexity and Bicameralism: Parliamentary Structure and the Duration of the Government Formation in Europe

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Abstract The literature on cabinet formation duration has traditionally revolved around two fundamental explanatory drivers: uncertainty and complexity of the bargaining environment. While the role of these factors in the cabinet formation process is well-established, little can be said about their impact on bargaining delays under different institutional settings, such as unicameral vs. bicameral legislatures. In this chapter, we contribute to this literature by investigating whether the effect of uncertainty and complexity on bargaining delays is conditional on the parliamentary structure in which negotiations take place. Our analysis of about 700 government formation processes in 28 European countries highlights that the impact of uncertainty and complexity on the duration of government negotiations is stronger in bicameral systems than in unicameral parliaments.

Keywords Government formation duration · Bicameralism · Institutions · Uncertainty · Complexity

Introduction

The impact of the structure of parliaments on government formation has been investigated since Lijphart's seminal contribution. Over 3 decades ago, Lijphart (1984) conjectured that, in those parliamentary systems where upper chambers play a strong role, cabinet builders tend to form oversized coalitions in order to gain control over them (see also Sjölin, 1993; Thürk et al., 2021). Thereafter, scholars have

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analyzed the effect of bicameralism on a wide range of aspects related to government formation and duration (Diermeier et al., 2007; Druckman & Thies, 2002; Druckman et al., 2005; Eppner & Ganghof, 2015, 2017). Empirical findings highlight that bicameral parliaments may indeed influence fundamental aspects of the process of government formation such as the type of coalition that eventually forms, the number of attempts needed to reach an agreement, the decision to write a formal coalition contract, as well as government duration. Apart from a few exceptions (see De Winter & Dumont, 2008; Giannetti et al., 2020), within this area of research relatively little attention has been paid to the relationship between the bicameral organization of legislative assemblies and the duration of the bargaining process to form a new cabinet. This study aims at helping to fill this gap.

The literature on cabinet formation duration has traditionally revolved around two fundamental explanatory factors: uncertainty and complexity of the bargaining environment. Uncertainty, i.e. incomplete information about key parameters of the bargaining environment, makes it harder for *formateur* parties to propose a satisfactory offer to other negotiators, resulting in prolonged bargaining (Diermeier & van Roozendaal, 1998). Complexity implies that players are faced with a particularly high number of options leading to longer negotiations before a new government is formed (Martin & Vanberg, 2003; Golder, 2010). While the role of uncertainty and complexity in the cabinet formation process is well-established, little can be said about their impact on bargaining delays under different institutional settings. In this chapter, we contribute to the literature by investigating whether institutional arrangements such as bicameralism shape parties' behaviour in government negotiations. In particular, we argue that the relationship between the key parameters of the bargaining environment and cabinet formation duration should vary according to institutional features like bicameralism. In other words, the effect of uncertainty and complexity on bargaining delays should be conditional on the parliamentary structure under which negotiations take place. To test our hypotheses, we use data taken from the European Representative Democracy Data Archive (ERDDA) (Andersson et al., 2014; Bergman et al., 2019, 2021; Hellström et al., 2021) covering about 700 government formation processes clustered in 28 countries in Western, Central and Eastern Europe including both unicameral and bicameral parliaments.

This chapter is organized as follows. The next section reviews the literature on formation duration and examines how the two key explanatory factors emphasized in this body of research might interact with the bicameral organization of parliaments. Two testable hypotheses are put forward about the impact of uncertainty and complexity on cabinet formation duration according to different parliamentary structures. The third section describes the data and the way our main variables have been operationalized. Results are presented and discussed in the fourth section. Upper chambers are found to exacerbate the problems resulting from uncertainty and complexity, hence increasing delays in negotiations. Concluding remarks follow in the final section.

Theory and Hypotheses

The existing literature explains the variations observed in the duration of the bargaining process over government formation in terms of two main drivers: uncertainty and complexity in the bargaining environment. In their seminal work, Diermeier and van Roozendaal (1998) acknowledged that under the assumption of complete information, rational bargaining is incompatible with delays. Game-theoretical models suggest that in equilibrium the first offer is immediately proposed, and it is always accepted by the other negotiators. However, this prediction sharply contrasts with real-life records, which show a wide variation in the length of the formation process within and across countries (see below). Nevertheless, game-theoretical models are a useful tool for studying bargaining delays, provided that the assumption of complete and symmetric information is relaxed. Within this framework, the time needed to form a new government reflects the degree of uncertainty about negotiators' policy preferences. In the presence of incomplete information—e.g. when crucial events such as general elections trigger a change of political actors' preferences—a *formateur* may not know what combination of government policies and ministerial portfolios would constitute a satisfactory offer to other negotiators. Therefore, uncertainty implies a higher number of interactions in the form of offers and counter-offers to reveal parties' preferences, resulting in prolonged negotiations.

The strategic foundation of Diermeier and van Roozendaal's model excludes other potential explanations for bargaining delays. However, it has been shown that, even assuming complete information about actors' preferences, the government formation process becomes more problematic as the complexity of the bargaining environment increases. Martin and Vanberg (2003) identify two main sources of complexity: the ideological range of the government emerging from negotiations and the number of parties involved in the bargaining process. According to the authors, the ideological heterogeneity of the coalition that will form makes harder for party leaders to evaluate which kind of proposals are acceptable or not, while an increase in the number of parties hinders a stable agreement that is good enough for all the potential coalition members. This brings Martin and Vanberg to conclude that bargaining delays are better explained by complexity rather than by uncertainty. Empirical evidence has been provided supporting both these alternative explanations. In order to solve the dispute, Golder (2010) investigates the problem from a new angle, finding that both uncertainty and bargaining complexity matter, but in a conditional way: while uncertainty always produces delays, complexity seems to matter especially when uncertainty is sufficiently high. Finally, De Winter and Dumont (2008) examine the issue by using a richer set of indicators of uncertainty as well as of bargaining complexity. They also find empirical support for both arguments.

Almost none of the existing studies dealing with bargaining delays has explicitly investigated the impact of the structure of parliament on the government formation

duration.¹ As a recent exception, Giannetti et al. (2020) show that bargaining delays decrease as the partisan incongruence between the two chambers increases. However, their analysis is carried out on bicameral countries only. From a more general perspective, our study aims instead at assessing the role of bicameralism in the cabinet formation process and in what way the parliamentary structure interacts with uncertainty and complexity of the bargaining environment. To do so, the existing research exploring the rationales for and the effects of bicameralism on the legislative process is a convenient starting point (for a review see Cutrone & McCarty, 2006; Heller, 2007).

Bicameralism—like all institutional arrangements that are devised to split political authority—is commonly understood as a mechanism that generates delay or vetoes in policy-making and constraints for the executive (Cutrone & McCarty, 2006).² As far as policy-making is concerned, a powerful upper chamber is expected to induce stability in the law-making process. The downside of stability is gridlock—that is, inability to change the status quo policies inherited from previous governments. Most of the spatial models of legislative choice show that bicameralism tends to expand the size of the so called ‘gridlock interval’, creating therefore opportunities for political stalemate (Binder, 2003; Krehbiel, 1998; Tsebelis & Money, 1997; Tsebelis, 2002).

The size of the gridlock essentially depends on the ideal points of the ‘pivotal’ actors in the two chambers, that is those legislators whose support is necessary for the passage of new bills given the institutional structure of the policy-making process and the distribution of preferences. Under complete information, the proposal initiator knows the size of this area, which includes the set of status-quo policies that cannot be legislated upon. Thus, under the assumption of complete information, the expectation is that the agenda setter will abstain from proposing a change to the status quo when the upper chamber can veto it, fostering policy stability. However, in real-world legislative politics we do observe proposals that are rejected by the upper chamber. This may happen especially when the level of uncertainty about the positions of pivotal actors is particularly high, for instance in the period immediately after a general election (Boranbay-Akan et al., 2017). This implies that, when the assumption of complete information is relaxed, bicameralism leads to a higher probability of failure for any legislative proposal, causing unnecessary delays and inefficiencies in legislative policy-making.

¹In this regard, De Winter and Dumont’s (2008) contribution is an exception. In a comprehensive work about the process of coalition bargaining in Western Europe, the authors tested the impact of a set of institutional variables including the presence of an upper chamber. The aim of De Winter and Dumont’s comparative analysis was to assess the impact of different clusters of factors—preferences, structural attributes, critical events, etc.—on cabinet formation. However, they did not explicitly focus on bicameralism and hence did not explore the interaction among bicameralism and the explanatory factors mainly emphasized in the literature.

²Historically, the constitutional provision of bicameralism has been justified by the need to improve the consensus over legislation and generate more stable political decisions (Riker, 1992).

When the status quo lies outside the gridlock area, the two chambers may enact new legislation, which will reflect a compromise agreement between the majorities of each chamber. Most of bicameral legislatures around the world adopt the so called ‘navette’ system to solve inter-chameral differences, whereby a bill shuttles back and forth from one chamber to the other until the same text is approved by both houses. According to Tsebelis and Money (1997), under conditions of incomplete information, the number of negotiating rounds between the two chambers is a function of one house’s uncertainty about the other house’s willingness to compromise. In other terms, when either the initial preferences of pivotal actors or their discount factors are common knowledge, negotiations should conclude quickly. On the contrary, when there is uncertainty about houses’ preferences and their level of impatience to reach an agreement, the length of the bargaining process should increase. These models show that bicameralism may lead to delays that can manifest either in the form of an increased risk of failure of any legislative proposals or in prolonged disagreement between the two chambers. Although these consequences have been examined in relation to the legislative process (see for example Pedrazzani & Zucchini, 2020), we conjecture that bicameralism may induce similar effects on the government formation process.

When uncertainty is high, the government formation process is characterised by a number of proposals and counterproposals which allows the *formateur* and the negotiating parties to accumulate information about mutual policy preferences and office payoffs and to signal their level of patience to other negotiators. Bicameralism may increase the risk that the *formateur*—which is typically the largest party in the lower house—makes a ‘wrong’ proposal as it may know very little about the preferences of the negotiating parties in the lower and in the upper chamber. Moreover, in a bicameral setting a proposal deemed acceptable by the parties in the lower chamber may not be suitable for those represented in the upper one, triggering therefore a new round of negotiation to find a compromise between the two houses.

Regarding complexity, its effects may be shaped by bicameralism in two ways: through an ‘investiture effect’ of upper houses—i.e. when an additional investiture is required, and government survival depends on a confidence relation involving both chambers; and through a ‘legislative effect’—i.e. when upper chambers are endowed with significant powers that might block the government’s legislative agenda. Where both chambers are involved in the cabinet investiture procedures, building a new government means gathering a coalition of parties able to win a majority of votes in the two branches of parliament. The need to obtain an explicit support of a legislative majority should contribute to the overall bargaining complexity and thus it should increase the length of time it takes a government to form (Golder, 2010). In most parliamentary systems, only the lower house takes part in the confidence relationship with the executive. However, even in those cases bicameralism may shape the government formation process, because potential coalition partners try to anticipate what could happen in the legislative process when negotiating the formation of a new cabinet. Government negotiations imply policy bargaining between potential members of the prospective coalition. When only one chamber exists, it is reasonable to assume that the policy negotiated during the

government formation stage could easily pass into law by the members of the same parties supporting the cabinet in the legislature. On the contrary, in bicameral systems the upper chamber can affect the success or failure of government-sponsored bills, even when it is not directly involved in the cabinet investiture or removal procedures. This ‘legislative effect’ is what Druckman et al. (2005) have called ‘influence without confidence’.

Bicameralism can interact with complexity also for other reasons. In particular, bicameral systems tend to have more partisan veto players than unicameral systems (Tsebelis, 2002). Bicameralism can increase complexity also by creating opportunities for different cohorts of the same party to accentuate their intraparty conflicts (Giannetti & Benoit, 2009). Moreover, bicameralism can provide incentives for party members in different chambers to take different public stands on party policy, contributing in this way to blurring parties’ labels (VanDusky-Allen & Heller, 2014). Therefore bicameralism, by providing a larger number of veto players and a higher risk of intraparty conflicts in the future law-making process, can make harder for party leaders to find an agreement that is good enough for all the potential coalition members and evaluate which proposals are acceptable or not.

Another feature of bicameralism—arguably associated with complexity—that might affect the length of negotiations has been highlighted by Diermeier and Myerson (1999). The authors shift their attention from the spatial characteristics of the decision-making structure in bicameral systems to the potential rivalry between the two chambers for money and power. In particular, they demonstrate through formal modelling that bicameral parliaments increase the incentives for each chamber to create more institutional hurdles. Diermeier and Myerson adopt a vote-buying model whereby outside agents, such as lobbyists, use bribes to try to influence legislative outcomes. In order to maximise their monetary payoff, legislators of both chambers have an incentive to make buying policy passage as expensive as possible, increasing the costs of passing legislation by creating institutional hurdles which include within-chamber veto points and super majorities. In equilibrium, both chambers should maximise their ‘hurdle factor’ in order to gain as much as possible from lobbying on any given bill. Groseclose and King (2001) observed that replacing rent-seeking motivations with policy-seeking ones as the core assumptions for legislators’ behaviour would lead to similar consequences: competing chambers would multiply internal veto points in order to maximise their policy influence in the future law-making process. Although these models were developed with the purpose of explaining the internal organisation of the U.S. bicameral system, they suggest that an upper chamber in competition for policy influence with the lower one might create hurdles to maximise its leverage in the negotiations over a new government—which increases the complexity of the bargaining environment—making the search of a compromise more difficult.³

³In the context of parliamentary systems, this argument should also take into account that party politics can help overcome institutional barriers and vetoes (Druckman et al., 2005).

All that said, we formulate the following expectations about the impact of bicameralism on bargaining delays: 228
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H1: *Uncertainty should increase bargaining delays more strongly when the parliament is bicameral.* 230
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H2: *Complexity should increase bargaining delays more strongly when the parliament is bicameral.* 232
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To summarize, our argument is that the structure of parliaments is expected to moderate the relationship between, ~~on the one hand,~~ uncertainty and complexity, and bargaining duration on the other. Put differently, for the reasons explained above, uncertainty and complexity should lead to longer delays in the presence of a bicameral system. 234
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These hypotheses are formulated at a very general level, i.e. contrasting unicameral vs. bicameral systems. However, following Lijphart (1984, 2012), we know that bicameral legislatures are not all equal, as they can differ in terms of institutional powers or prerogatives of the upper chamber vis-à-vis the lower one. We expect that these differences should matter. This is why we test our main expectations on bargaining delays recorded in 28 European countries between 1945 and 2021 by taking into account indicators of institutional powers of the upper and lower houses. However, before turning to the empirical analysis, we first provide information on the data and the coding of the main variables used in this study. 239
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Data and Coding 248

Data to test our hypotheses come from the Representative Democracy Data Archive (Andersson et al., 2014; Bergman et al., 2019, 2021; Hellström et al., 2021) and cover 28 democracies in Western and Eastern Europe. The selected countries include both unicameral and bicameral democracies. The countries included in our dataset are: Austria (1945–2019), Belgium (1946–2018), Bulgaria (1990–2014), Czech Republic (1996–2017), Denmark (1945–2019), Estonia (1992–2015), Finland (1945–2019), France (1962–2018), Germany (1949–2021), Greece (1977–2019), Hungary (1990–2018), Iceland (1944–2021), Ireland (1944–2020), Italy (1948–2021), Latvia (1993–2014), Lithuania (1992–2014), Luxembourg (1945–2021), Malta (1987–2013), the Netherlands (1946–2021), Norway (1945–2020), Poland (1991–2014), Portugal (1976–2019), Romania (1990–2014), Spain (1977–2019), Slovakia (1992–2016), Slovenia (1990–2014), Sweden (1945–2021), UK (1945–2019). Altogether, these data provide information on 701 government formation processes including government formation duration, which is our key dependent variable. 249
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Following the existing literature (Diermeier & van Roozendaal, 1998; Martin & Vanberg, 2003; De Winter & Dumont, 2008; Golder, 2010; Ecker & Meyer, 2015, 2020; Curini & Pinto, 2016; Bäck et al., 2022), formation duration is defined as the number of days between the termination of the previous government and the start of 264
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the new one. The beginning of the bargaining period coincides with one of the following events: election, change in the government’s party composition or change of the identity of the prime minister. The formation process ends either the day on which the new government is officially inaugurated by the head of state or the day of the investiture vote (Strøm et al., 2008).

The box plots in Fig. 1 show the distribution of formation duration across and within the countries included in our dataset. The boxes represent the interquartile range. The black dashes inside the boxes indicate the median duration of the bargaining process in each country, while the whiskers span all data points within 1.5 interquartile range of the nearer quartile. The vertical line shows the median duration of the government formation process in the 28 countries included in our analysis (18 days). There is a substantial variation in the median duration of the government formation process across countries. The process lasts 70 days in the Netherlands, but only few days in Sweden (1 day), France (2 days) or UK (2 days). There is also a considerable variation of formation duration within countries, with the length of the bargaining process spanning through a wide range of values, as the size of the boxes and the length of the whiskers testify.

Following previous studies, we operationalize the two main variables used to explain bargaining delays in terms of a number of standard indicators. To assess the impact of uncertainty we employ a dummy variable (*Post-election*) which codes as

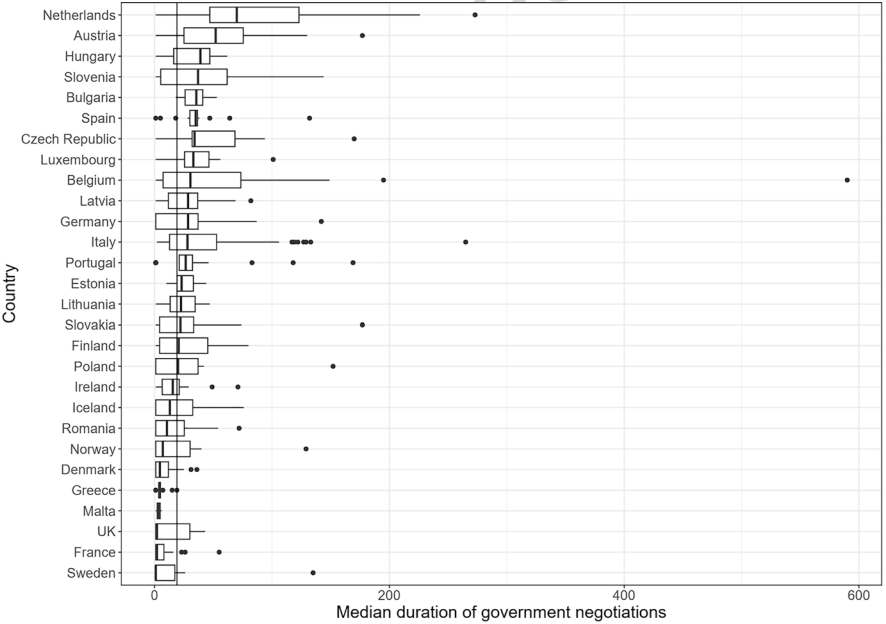


Fig. 1 Duration of the government formation process across and within 28 European countries. *Note:* The black dash inside the boxes indicates the median duration in each country. The box represents the interquartile range, while the whiskers span all data points within 1.5 interquartile range of the nearer quartile. The vertical line shows the median duration registered in the data

one the formation processes starting immediately after a general election, zero otherwise. To measure the level of complexity in the bargaining environment, we include two variables: the *Effective number of parliamentary parties (ENPP)* and *Polarization* in the parliament. The ENPP is computed with the standard formula proposed by Laakso and Taagepera (1979). Polarization is calculated as the range between the two most extreme parties in parliament along the left-right dimension. To compute ideology-related variables on the two dimensions, we relied on data on party positions derived from the ParlGov database (Döring et al., 2022), which provides parties' ideal points on a 0–10 left-right scale obtained by combining data from different expert surveys (Castles & Mair, 1984; Huber & Inglehart, 1995; Benoit & Laver, 2006; Bakker et al., 2015).

We expect that the indicators of uncertainty and complexity in the bargaining environment interact with the presence of an upper chamber. To test this statement, we rely on two indicators of bicameralism. The first indicator is a simple dummy variable distinguishing between unicameral and bicameral systems (*Bicameralism*). The second one is the *Index of bicameralism* introduced by Heller and Branduse (2014) with the purpose of capturing the power of upper chambers to affect the content of legislation and the policy outcomes on the basis of their institutional characteristics.⁴ This measure considers whether the upper chamber can veto all legislation, only a subset of bills, or simply delay passage (reporting in the latter case for how many days). The final score combines this information with an adjustment in case the veto power of the upper chamber is overridable. The index ranges from 0 to 1, with 1 indicating an upper chamber with formal legislative powers symmetric to those of the lower house and 0 representing upper houses with a purely ceremonial role. In our sample, the most influential upper chambers (a score of 1) can be found in Italy, the Netherlands, Belgium (before 1995), and Sweden (before 1970). The least influential is the Spanish *Senado*, with a score of 0.092.⁵ For the purposes of this study, where both unicameral and bicameral democracies are taken into account, we consider unicameral countries as having a score of zero on the index of bicameralism.⁶

As stated by Lijphart (1984, 2012), in order to understand if bicameralism matters it is necessary to also take into account how much the two chambers diverge in terms of partisan composition and ideological preferences. For this reason, we also include a variable measuring the extent to which the two chambers have dissimilar

⁴For a discussion about the way this index correlates with alternative measures see Heller and Branduse (2014); for a broader discussion about investiture and removal rules, see the chapter by Louwerse in this volume.

⁵The index of bicameralism for Belgium (before 1995), Sweden (before 1970) and Denmark (before 1953) is taken from Giannetti et al. (2020). It should be noted that in the original dataset of Heller and Branduse (2014)—which includes 74 bicameral systems from all over the world—no countries receive a score of zero. This means that the upper chamber has always some potential to alter political outcomes (see also Tsebelis & Money, 1997).

⁶Unicameral systems also received a score of zero in the analysis conducted by VanDusky-Allen and Heller (2014).

political composition (*Incongruence*). More precisely, we employ a dummy variable taken from Tsebelis and Money (1997, pp. 46–54). Upper chambers are coded as incongruent when they move away from the lower house on the basis of two features: the selection method and the type of representation. Members of upper chambers can be selected using various methods, from direct elections to indirect elections, appointment or heritage. The second feature is related to who is represented in the upper house: citizens on equal basis, geographical units, professional sectors, ethnic minorities or linguistic communities. Taken together, these two criteria should determine the degree of incongruence between the two chambers constituting the parliament. Countries with an incongruent upper chamber were coded with a one, while those with a congruent or a unicameral parliament with a zero.⁷

This variable is only a rough proxy of the actual degree of partisan and ideological correspondence between chambers.⁸ Our coding of congruence does not necessarily imply a perfect matching in the partisan composition and ideological preferences of the parliamentary houses. As stressed in the theoretical section, there can be incentives for legislators of the same parties to take different policy positions in the two legislative branches (VanDusky-Allen & Heller, 2014). Moreover, since upper houses usually represent larger constituencies, legislators' preferences may vary (Tsebelis & Money, 1997, p. 54). Finally, other institutional features—such as voters' and candidates' qualifications and requirements, length of mandate and simultaneity of elections—can vary between the chambers, determining variations in the partisan composition and ideological divergences. Table 1 provides data on the index of bicameralism and incongruence registered in the 28 countries included in our analysis.

Following previous studies, we incorporate several control variables in our analyses. The first one is an institutional factor variable which considers three possible cases: no formal investiture by the parliament is required for government formation; some form of investiture is required, and it involves the single chamber in unicameral systems or the lower chamber in bicameral ones; some form of investiture is required involving both chambers where they exist (Diermeier & van Roozendaal, 1998; Martin & Vanberg, 2003).⁹ The second control variable checks for government formation processes that involve a *majority situation*. In the latter cases, the party controlling the absolute majority of seats can form a government without

⁷The coding of unicameral parliaments as congruent ones may appear a bit of a stretch. For this reason, we also carry out models excluding the incongruence covariate. The results do not significantly differ from those reported in this chapter.

⁸For a more precise measure of partisan incongruence based on parties' seat-share in the upper and lower chamber, see for example Giannetti et al. (2020).

⁹For more details on the coding of investiture procedures see: Rasch, Martin and Cheibub (2016, pp. 342–350). The 'dual responsibility' norm is quite rare in Europe. Nowadays, only in two European countries—Italy and Romania—some form of investiture involving both the chambers is required for government formation. In Italy the investiture vote for the government takes place in each chamber separately, while in Romania it is voted by the two chambers sitting in a joint session. In the past, an investiture vote in both chambers was also required in Belgium (until 1995) (André et al., 2016).

Table 1 Index of bicameralism and incongruence in 28 European countries

Country	No. of governments	System	Index of bicameralism	Incongruence
Austria	28	Bicameral	0.485	No
Belgium (before 1995)	32	Bicameral	1.000	No
Belgium (after 1995)	11	Bicameral	0.500	No
Denmark (before 1953)	4	Bicameral	1.000	No
Denmark (after 1953)	35	Unicameral	0.000	n.a.
Finland	49	Unicameral	0.000	n.a.
France	37	Bicameral	0.163	Yes
Germany	31	Bicameral	0.977	Yes
Greece	21	Unicameral	0.000	n.a.
Iceland	36	Unicameral	0.000	n.a.
Ireland	29	Bicameral	0.165	No
Italy	61	Bicameral	1.000	No
Luxembourg	21	Unicameral	0.000	n.a.
The Netherlands	30	Bicameral	1.000	No
Norway	33	Unicameral	0.000	n.a.
Portugal	19	Unicameral	0.000	n.a.
Spain	15	Bicameral	0.092	Yes
Sweden (before 1970)	12	Bicameral	1.000	No
Sweden (after 1970)	19	Unicameral	0.000	n.a.
UK	27	Bicameral	0.497	Yes
Bulgaria	9	Unicameral	0.000	n.a.
Czech Republic	12	Bicameral	0.151	Yes
Estonia	14	Unicameral	0.000	n.a.
Hungary	11	Unicameral	0.000	n.a.
Latvia	21	Unicameral	0.000	n.a.
Lithuania	13	Unicameral	0.000	n.a.
Malta	7	Unicameral	0.000	n.a.
Poland	17	Bicameral	0.600	Yes
Romania	21	Bicameral	0.992	No
Slovakia	11	Unicameral	0.000	n.a.
Slovenia	15	Bicameral	0.438	Yes
Total	701			

Note: Norway is an example of qualified unicameralism, since, until 2009, a quarter of the members of the *Storting* would constitute a sort of upper chamber. In this work, Norway is treated as a unicameral system. The index of bicameralism has been developed by Heller and Branduse (2014). Incongruence is based on the coding of Tsebelis and Money (1997, pp. 43–54). The Belgian bicameral legislature after the constitutional reform of 1994 is considered as incongruent by the two authors. In this case, we follow Lijphart (2012, p. 199), who coded Belgium as a congruent system

negotiating with other parties (Golder, 2010). The third one is a dummy coding as one all the *semi-presidential* systems. As semi-presidential cabinets are negotiated between the president and the parties represented in the legislative assembly, the bargaining environment is quite different from that characterising pure parliamentary systems (Schleiter & Morgan-Jones, 2010). We also include a dummy distinguishing Western from Central and Eastern Europe. The inclusion of this variable is justified by the fact that existing theoretical approaches attempting to explain delays in government formation seem unable to fully account for the empirical patterns observed in Central and Eastern Europe (Ecker & Meyer, 2015). Finally, we incorporate a series of dummies identifying the decade in which the negotiation took place.

Our argument is grounded on the role of bicameralism as a factor bringing greater uncertainty over political outcomes and greater complexity in the bargaining environment. However, in most bicameral parliamentary systems the executive power is in the hands of the coalition of parties controlling a legislative majority in the lower house, which is usually recognised as “the more important one” (Lijphart, 2012, p. 188). For this reason, the presence of a majority party and all the factors associated to the complexity of the bargaining environment are measured only in relation to the lower chamber.¹⁰

Analysis and Discussion

We use Cox’s partial likelihood survival regressions to test the two hypotheses formulated above. A key element in Cox models is the hazard rate—that is, the probability that an event occurs at a particular point in time, conditional to the fact that it has not occurred yet. Here, successfully reaching an agreement between party leaders to form a government is the event of interest (Box-steffensmeier & Jones, 2004). Table 2 reports the results of the Cox regressions we have estimated. In each of them, the coefficients are expressed as proportional hazard estimates. A positive coefficient indicates an increase of the risk to achieve a successful agreement between negotiators to form a government, while a negative coefficient indicates a decrease of the same risk. In other words, a positive coefficient implies that higher values of a given covariate reduce the duration of the government formation process. Conversely, a negative coefficient means that the increase of a certain

¹⁰ Following Golder (2010, p. 6), we include variables that match with the whole formation process and are not related to the government that ultimately forms. The latter type of measures should not be used since in many cases the full formation process is characterized by several bargaining rounds, which include a variety of alternative potential coalitions. For a recent analysis focused on bargaining attempts and employing an actor-centred approach to delays in government formation process see Ecker and Meyer (2020).

Table 2 Determinants of the duration of the government formation process in 28 European countries

	M1	M2	M3	M4	M5	M6	M7	
Post-election	-1.35 ***	-1.13 ***	-1.35 ***	-1.35 ***	-1.14 ***	-1.05 ***		t2.1 t2.2 t2.3 t2.4 t2.5 t2.6
	(0.16)	(0.16)	(0.17)	(0.16)	(0.16)	(0.17)		
ENPP	-0.10 *	-0.09	-0.12	-0.09 *	-0.17 *	-0.16	-0.20 **	t2.7 t2.8
	(0.05)	(0.06)	(0.09)	(0.05)	(0.09)	(0.10)	(0.09)	t2.9
Polarization	-0.11 *	-0.12 **	-0.11 *	0.02	0.04	0.04	-0.01	t2.10 t2.11
	(0.06)	(0.05)	(0.06)	(0.07)	(0.07)	(0.08)	(0.06)	t2.12
Index of bicameralism	-0.75 **	-0.31	-0.96	0.78	0.96		-1.27 ***	t2.13 t2.14
	(0.30)	(0.36)	(0.58)	(0.55)	(0.74)		(0.39)	t2.15
Incongruence in representation	0.37	0.37	0.37	0.24	0.19	0.44	0.31	t2.16 t2.17
	(0.26)	(0.26)	(0.26)	(0.26)	(0.26)	(0.40)	(0.36)	
Lower chamber investiture	-0.16	-0.16	-0.15	-0.13	-0.11	-0.09	-0.07	t2.18 t2.19
	(0.24)	(0.24)	(0.25)	(0.23)	(0.24)	(0.27)	(0.36)	
Both chambers investiture	-0.04	-0.22	-0.05	-0.06	-0.26	-0.32	0.36	t2.20 t2.21
	(0.27)	(0.27)	(0.28)	(0.24)	(0.26)	(0.24)	(0.37)	
Majority party	0.28 **	0.29 **	0.26 **	0.32 ***	0.29 ***	0.31 ***	0.20	t2.22 t2.23
	(0.11)	(0.12)	(0.11)	(0.10)	(0.10)	(0.11)	(0.17)	
Semi-presidentialism	-0.15	-0.11	-0.14	-0.07	0.02	0.03	0.05	t2.24 t2.25
	(0.28)	(0.28)	(0.29)	(0.26)	(0.25)	(0.26)	(0.38)	
Central and Eastern Europe	-0.76 ***	-0.77 ***	-0.76 ***	-0.75 ***	-0.74 ***	-0.79 ***	-0.42 *	t2.26 t2.27
	(0.22)	(0.21)	(0.22)	(0.19)	(0.18)	(0.18)	(0.24)	t2.28
1950	-0.32 *	-0.28	-0.32 *	-0.26	-0.19	-0.24	-0.35	t2.29 t2.30
	(0.17)	(0.18)	(0.17)	(0.18)	(0.19)	(0.19)	(0.21)	
1960	-0.36 *	-0.34	-0.36 *	-0.34	-0.32	-0.31	-0.64 *	t2.31 t2.32
	(0.21)	(0.22)	(0.21)	(0.22)	(0.22)	(0.21)	(0.34)	
1970	-0.54 ***	-0.48 ***	-0.55 ***	-0.49 **	-0.44 **	-0.46 **	-0.55 **	t2.33 t2.34
	(0.18)	(0.19)	(0.18)	(0.20)	(0.18)	(0.18)	(0.25)	t2.35
1980	-0.55 **	-0.52 **	-0.56 **	-0.49 *	-0.49 *	-0.49 **	-0.60 **	t2.36 t2.37
	(0.25)	(0.26)	(0.25)	(0.26)	(0.25)	(0.25)	(0.26)	t2.38
1990	-0.12	-0.04	-0.13	-0.11	-0.08	-0.03	-0.36	t2.39 t2.40
	(0.23)	(0.22)	(0.22)	(0.24)	(0.23)	(0.21)	(0.30)	
2000	-0.14	-0.07	-0.15	-0.12	-0.09	-0.01	-0.35	t2.41 t2.42
	(0.24)	(0.24)	(0.23)	(0.25)	(0.24)	(0.22)	(0.33)	
2010	-0.56 **	-0.49 **	-0.56 **	-0.56 **	-0.52 **	-0.48 **	-0.93 ***	t2.43 t2.44
	(0.23)	(0.23)	(0.23)	(0.23)	(0.22)	(0.21)	(0.36)	t2.45

(continued)

Table 2 (continued)

		M1	M2	M3	M4	M5	M6	M7
t2.46	Post-election X index of bicameralism		−0.66			−0.74		
t2.47			**			***		
t2.48			(0.27)			(0.27)		
t2.49	ENPP X index of bicameralism			0.05		0.19		
t2.50				(0.13)		(0.12)		
t2.51	Polarization X index of bicameralism				−0.24	−0.31		
t2.52					***	***		
t2.53					(0.09)	(0.08)		
t2.54	Bicameralism						0.84	
t2.55							(0.76)	
t2.56	Post-election X bicameralism						−0.65	
t2.57							***	
t2.58							(0.23)	
t2.59	ENPP X bicameralism						0.08	
t2.60							(0.10)	
t2.61	Polarization X bicameralism						−0.22	
t2.62							**	
t2.63							(0.10)	
t2.64	AIC	7101.04	7092.79	7102.62	7089.42	7076.35	7082.49	3573.14
t2.65	R ²	0.36	0.37	0.36	0.37	0.39	0.38	0.29
t2.66	Num. obs.	668	668	668	668	668	668	372

t2.67 Note: Efron method for handling tied events has been employed. Clustered standard errors on
t2.68 countries in parentheses. Reference category for investiture: no investiture. Reference category for
t2.69 decades: 1940
t2.70 *p < 0.1; **p < 0.05; ***p < 0.01

387 covariate lengthens the process of government formation. Once exponentiated, the
388 coefficients can be interpreted as hazard ratios.¹¹

389 The first model reported in Table 2 is a baseline model where the *Index of*
390 *Bicameralism* is not interacted with any other variable. In Model 2, the *Index of*
391 *Bicameralism* is interacted with *Post-election*. In Model 3 and 4, the *Index of*
392 *Bicameralism* is interacted with *ENPP* and *Polarization*, respectively. The *Index of*
393 *Bicameralism* is finally interacted with all the three key independent variables in
394 Model 5. As a robustness check, Model 6 replicates Model 5, interacting the vari-
395 ables capturing uncertainty and complexity in the bargaining environment with the
396 binary indicator of *Bicameralism*. Model 7 replicates Model 1, running the analysis
397 only on those governments in our sample that were formed immediately after the
398 elections (in other words, dropping inter-electoral cabinets). Note that we drop from
399 all our analysis those formation processes that eventually ended up with nonpartisan
400 governments (see Golder, 2010 for a similar strategy). We also exclude observations

¹¹ We made a check by including in the models shared frailties, without relevant changes in the results. We opt therefore for a more parsimonious specification.

for which data on formation duration are missing. As a result, the total number of observations (that is, government formation processes) used in the analyses is 668.

Our hypotheses state that the impact of uncertainty (H1) and complexity (H2) on bargaining delays should be stronger in the case of bicameral parliaments. The results reported in Table 2 support our first hypothesis and, limited to the role of polarization, also the second one. We do not find support for the interaction between the effective number of parliamentary parties and bicameralism. Our results are also robust to different specification of bicameralism—our moderating variable—as the results in Models 5 and 6 indicate. Among the models that include the full sample of governments (1–6), these two ones have the lower Akaike Information Criterion (AIC) and hence they are those best fitting the data.

Focusing on the results from Model 5, which employs the more detailed *Index of Bicameralism*, the interactions of the latter with post-election status of government and polarization are statistically significant. Panel (a) in Fig. 2 displays the marginal impact of post-election status (solid line), conditional on different values of the bicameralism index. The graph shows that post-election status has a hazard ratio lower than one, meaning that it increases bargaining delays for all the values of the moderator. However, consistent with H1, this effect is larger the stronger is the upper chamber. As far as hazard ratios are concerned, post-election formation processes in unicameral countries (*Index of Bicameralism* = 0) are 68% less likely to reach an agreement on any given day than negotiation occurring in an inter-electoral period. Conversely, in bicameral systems with strong upper chambers (*Index of Bicameralism* = 1), post-election negotiations are 85% less likely to reach an agreement than processes occurring between elections. Similarly, as Panel (b) of Fig. 2 shows, a one-unit increase in polarization has no statistically significant impact on the duration of government negotiations in unicameral countries (*Index of Bicameralism* = 0), while in countries with a strong second chamber (*Index of Bicameralism* = 1) it decreases the risk of reaching an agreement by 24%.

However, hazard ratios are little informative and do not match with the quantity of interest that ultimately urged the analysts to use survival analysis to model the process of government formation, namely how the expected duration of negotiations change according to the combination of key covariates with the strength of the upper chamber. Unfortunately, the great flexibility of the Cox model comes at the expense of the possibility to compute predicted durations (Box-steffensmeier & Jones, 2004). To overcome this limitation, in this research we employ a recently introduced method to generate expected durations from Cox regression's estimations: *Cox Proportional Hazards with Expected Durations* or Cox ED (Kropko & Harden, 2020). Cox ED allows researchers to generate expected durations for individual observations and marginal changes in expected duration given a change in a covariate from the Cox model.¹²

¹² Cox ED employs a generalized additive model to map the model's estimated linear predictors to duration times. For more details on the method, see Kropko and Harden (2020).

Figure 3 graphs the predicted difference in the average duration of government negotiations according to different values of the index of bicameralism identifying three institutional settings: unicameralism (*Index of Bicameralism* = 0), weak bicameralism (*Index of Bicameralism* = 0.5) and strong bicameralism (*Index of Bicameralism* = 1). Predicted differences are computed by calculating expected durations for inter-electoral and post-electoral governments (Panel a) and for different levels of polarization (3rd and 1st quartile) (Panel b) and by subtracting the durations for each case. Using the method described in Kropko and Harden (2020) and averaging over the observed values of the other variables in the model (see Hanmer & Ozan Kalkan, 2013), we estimate about 10.2, 11, and 12.4 days of negotiations in the case of inter-electoral formation processes for unicameral, weak bicameral and strong bicameral systems respectively. These figures increase to 33.4, 50.6, and 80 days for negotiations occurring immediately after a general election. These differences (23.2 for unicameral systems; 39.6 for weak bicameralism; 67.6 for strong bicameralism) are substantial and statistically significant at standard levels as the confidence intervals displayed (Panel a) of Fig. 2 show. All together, they support the notion that bicameralism interacts with uncertainty in the bargaining environment to produce longer delays. These results are also confirmed by Model 7, which drops from the analysis all the inter-electoral governments. These may often be interim constructions, caused by prime ministers' changeovers or one party leaving a large coalition. It comes as no surprise, therefore, that in those cases bargaining duration is mostly relatively short, regardless of whether or not a country is bicameral. Excluding these interim constructions, bicameralism still matters, suggesting that this particular institutional feature is something more than just a moderator, but it has a direct effect on bargaining delays in those negotiations—those that occur immediately after elections—that have a higher theoretical value and empirical importance.

As for our second hypothesis, the analysis shows that the interaction between polarization and bicameralism is statistically significant. Panel (b) in Fig. 3 shows how much longer will negotiations take if we increase polarization from the value of 5.06 (1st quartile) to 7.18 (3rd quartile). The marginal changes are computed across the three institutional settings described above: unicameral systems, weak and strong bicameralism. According to the figure, when there is only one chamber, the impact of polarization on bargaining delays is not statistically significant as the confidence intervals cross the zero line. In weak bicameral systems, an increase in polarization brings on average to 7.65 more days of negotiations. Finally, when the two chambers have equal powers, the model predicts on average 26.25 more days to conclude negotiations in highly polarized parliaments. In other words, the figure shows that polarization leads to longer delays especially in bicameral systems. These results, although limited to the role of polarization, support our argument connecting bicameralism and complexity in the bargaining environment, which is based on the idea that bicameral systems make negotiations more complex by multiplying veto players and internal hurdles or creating incentives for intra-party conflicts (Diermeier & Myerson, 1999; Tsebelis, 2002). Despite the absence of a conditional relation between bicameralism and the fragmentation of the party

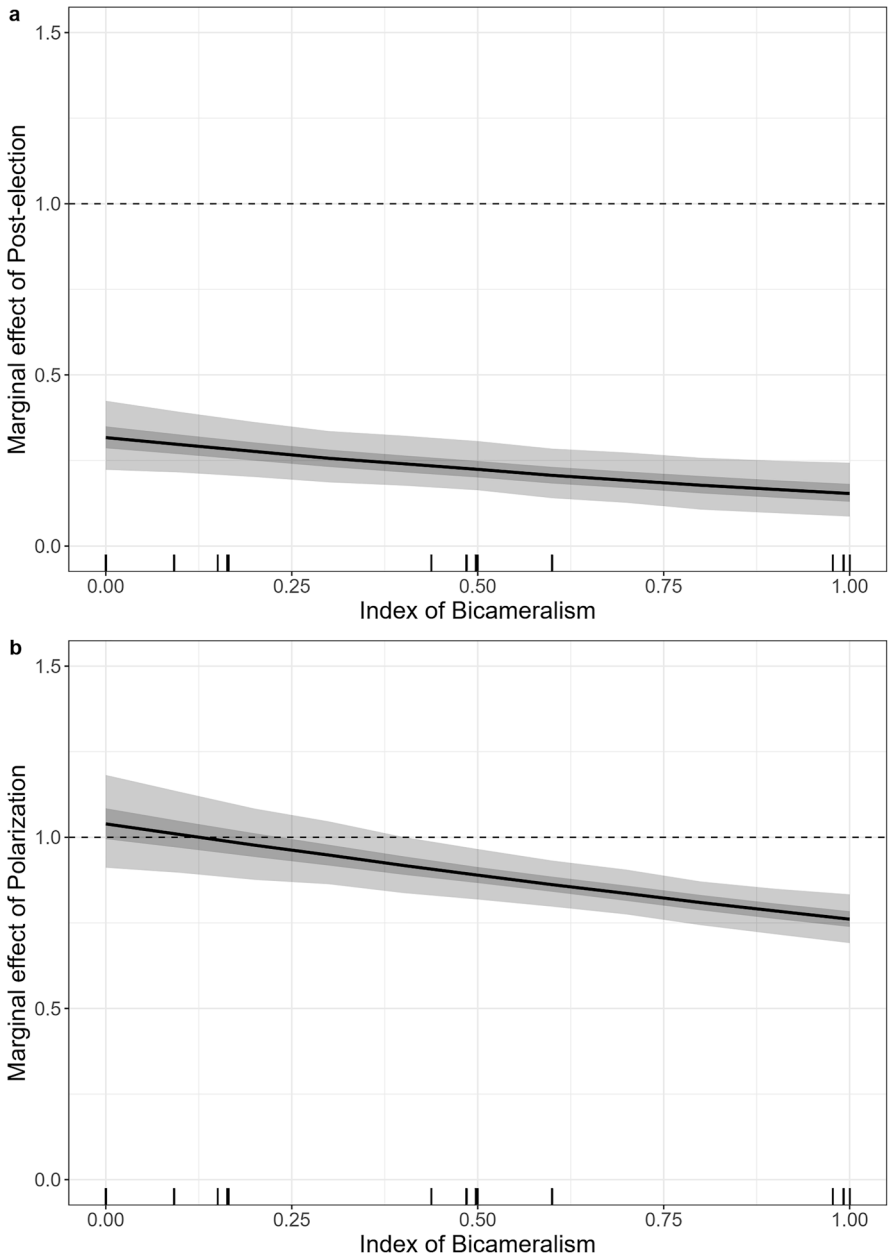


Fig. 2 Marginal impact of post-election status (a) and polarization (b) for different values of the index of bicameralism. *Note:* The solid lines represent the marginal effect of post-election status (a) and polarization (b), conditional on different levels of the index of bicameralism. Light grey area shows 95% confidence intervals around the median estimate from 1000 draws using parameters and covariance matrix obtained from Model 5. Darker grey area shows the central 50% area around the median. The rug plot represents the distribution of the index of bicameralism

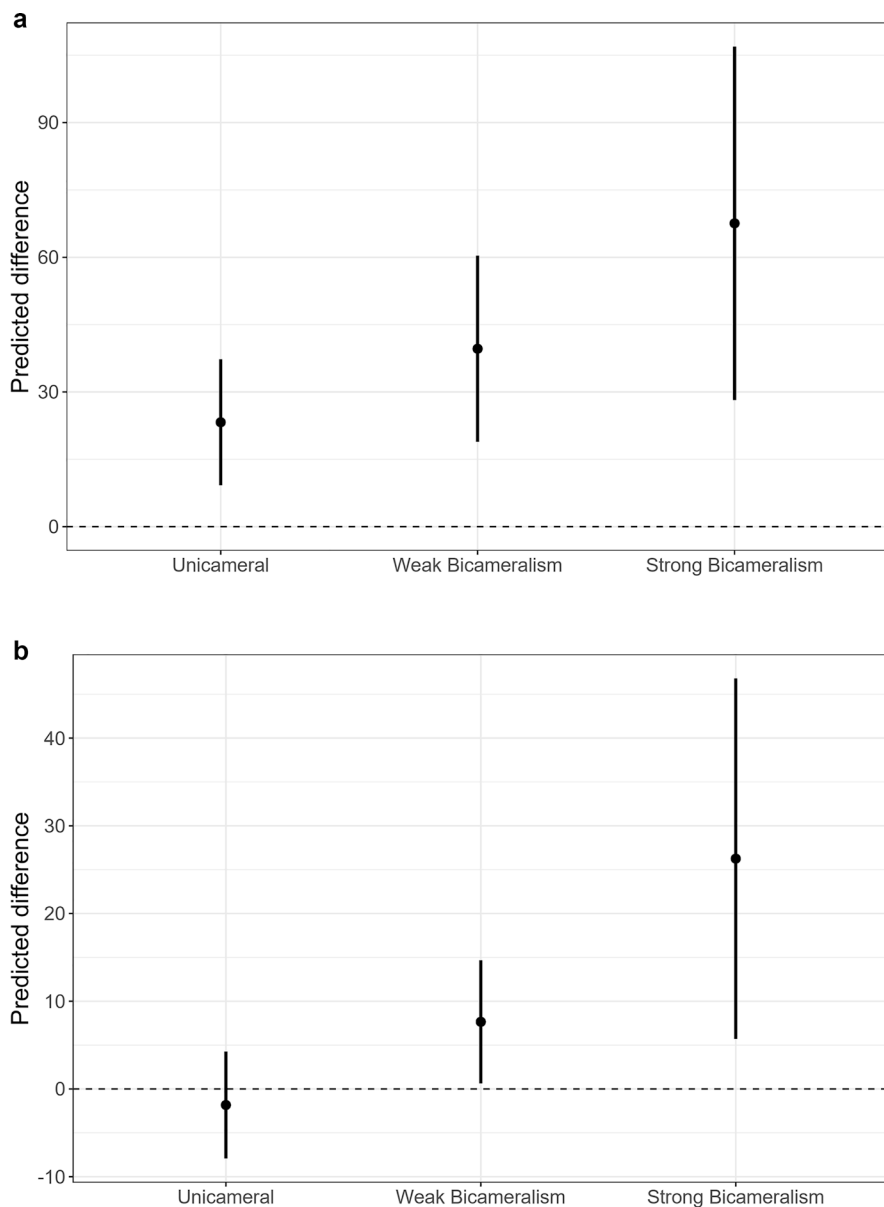


Fig. 3 The conditional impact of post-election status (a) and polarization (b) on the expected duration of government negotiations. *Note:* The points represent the predicted difference in the average duration of government negotiations for a unicameral legislature (index of bicameralism equal to zero), a system with a weak bicameralism (index of bicameralism equal to 0.5), and a system with strong bicameralism (index of bicameralism equal to 1). Predicted differences are computed by calculating expected durations for inter-electoral and post-electoral governments and for different levels of polarization (third and first quartile) and by subtracting the durations for each case. All the other variables are set at their observed value. Vertical lines show 95% bootstrapped confidence intervals. Estimates are based on Model 5. (a) Post-election vs. inter-election. (b) Polarization (3rd quartile) vs. polarization (1st quartile)

system, Table 2 lends support to the conjecture that higher complexity measured as the effective number of parties increases bargaining delays as the negative coefficient indicates. It should be noted that the impact of ENPP is particularly strong in Model 7. This result supports the theoretical argument advanced by Golder (2010), who suggested that the factors increasing complexity should matter only when uncertainty is sufficiently high.¹³

As for the control variables included in our analysis, Table 2 shows that in most of our models (1–6) majority situations result in shorter negotiations compared to when there is no party holding an absolute majority of seats. However, this result is no longer significant when only post-electoral governments are included in the analysis (Model 7). Similarly, our results indicate longer negotiations for Central and Eastern European countries in comparison to Western European countries. Despite bargaining delays in Central and Eastern Europe are on average as long as those in Western Europe (Ecker & Meyer, 2015),¹⁴ our analysis shows that when the impact of other covariates is taken into account, the unobserved characteristics captured by the dummy identifying the two groups of countries exert a significant impact on the length of the government formation process. With regard to the other controls, we do not find them to systematically affect bargaining delays (with the exception of some effects of the decade dummies).

Overall, our analysis confirms the role of uncertainty and bargaining complexity as the main drivers of bargaining delays. The focus on expected durations rather than on hazard ratios reveals the importance of bicameralism, and in particular the distribution of institutional powers between the two chambers, as a factor shaping the government formation process, both as a moderator of the uncertainty and directly when only post-electoral governments are taken into consideration. When uncertainty is high, shifting from unicameral to strong bicameral systems has the greatest impact on the expected number of bargaining days, even controlling for the factors that could determine divergences in partisan composition and ideological preferences between the two houses. Similarly, higher polarization results in longer negotiations especially in strong bicameral systems. Our results thus complement those reported by previous research dealing with bicameralism and coalition governments composition and duration (Druckman & Thies, 2002; Druckman et al., 2005; Eppner & Ganghof, 2015, 2017; Giannetti et al., 2020).

¹³ The fact that not all the factors related to complexity are significant can be due to the inclusion of Central and Eastern European countries, where complexity has no conditional impact on bargaining delays (see Ecker & Meyer, 2015).

¹⁴ However, the median survival time is different between the two group of countries (16 in Western Europe and 27 in Central and Eastern Europe).

Conclusions

A substantial body of research has shown that bargaining among potential coalition partners over government formation can be shaped by crucial institutional features of parliamentary democracies, among which the cameral structure of the legislative assemblies. This chapter has investigated how bicameralism might affect the length of negotiations over the formation of a new cabinet by heightening the uncertainty and the complexity of the bargaining environment. These features stand out as key explanatory variables of bargaining delays in the literature on formation duration. Our analysis of government formation processes in 28 European countries highlighted that stronger upper chambers tend to exacerbate the problems associated with uncertainty and complexity, hence increasing bargaining delays.

The literature has already pointed out the necessity of more elaborate empirical indicators of complexity and uncertainty. Along with this line of reasoning, we believe that accounting for the conditional effect of bicameralism and complexity on bargaining delays requires further theoretical elaboration. Strong upper chambers may affect the number of alternative governing coalitions that appear viable. However, it is not easy to tell whether, compared to a unicameral setting, a powerful upper chamber will increase or reduce the number of viable coalitions. On the one hand, the expectation that an upper chamber—especially when endowed with important powers—might increase the complexity of the bargaining environment seems plausible. On the other hand, not all the government coalitions that are viable in the lower chamber may be also viable in the upper chamber. For example, the set of coalitions controlling a majority of seats in both chambers may be smaller than the set of coalitions controlling a majority of seats in the lower chamber, with the effect of reducing complexity.

More generally, simply looking at the more or less symmetric powers of upper chambers is not sufficient to account for the variations in the duration of the government formation process. A second dimension appears crucial for understanding the effects of the structural organization of parliaments on several aspects of government formation, i.e. the degree of partisan congruence between the two chambers. Indeed, divergence in the preferences of the two houses is one of the main justification for bicameralism, especially in those countries in which such institutional arrangement has been developed as a constitutional check to guarantee equal representation of different territorial units or segments in the society (Buchanan & Tullock, 1962; Riker, 1992). In this study, we only marginally addressed this topic. This leaves room for future research on cabinet formation and the institutional design of bicameralism.

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