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"The Effects of Constitutions on Coalition Governments"

by

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# The Effects of Constitutions on Coalition Governments

# in Parliamentary Democracies[*]

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## ABSTRACT

**In this article we present an overview of our recent research on the effects of constitutions on coalition governments in parliamentary democracies. Our approach is based on the solution and estimation of a multilateral bargaining model which we use to investigate the consequences of constitutional features of parliamentary democracy for the formation and stability of coalition governments.**

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# 1    Introduction

In parliamentary democracies, the executive receives its mandate from the legislature, which also retains the power to dismiss the executive at any time *via* a vote of no–confidence. When more than two parties are represented in parliament, as long as no single party controls an absolute majority of seats, this fundamental feature of parliamentary democracy naturally leads to coalition governments. This is the norm in West European democracies that elect their parliaments according to proportional representation: e.g., Belgium, Denmark, Finland, Germany, Iceland, Italy, Netherlands, Norway and Sweden.

The formation and the survival of coalition governments in multiparty parliamentary democracies are the outcomes of a complex bargaining process among the parties represented in parliament. Countries differ, however, with respect to the specific rules in their constitutions that govern this bargaining process (see, e.g., Inter-Parliamentary Union (1986), Lijphart (1984) and Muller and Strom (2000)).

Focusing on the nine West European countries listed above over the post-war period, important constitutional differences that pertain to the way governments form and terminate can be described as follows. A first difference concerns whether the government needs an actual vote by parliament to legally assume office (the *investiture vote*), or whether it can simply assume office after being appointed by the head of state (i.e., either a monarch or a president). In Belgium (until 1995) and Italy, after a new government is inaugurated, it has to be approved by a parliamentary majority. The other countries considered here do not have such a requirement.

A second difference concerns whether to remain in power the government needs the continued, explicit support of a parliamentary majority (*positive parliamentarism*), or whether the lack of opposition by a parliamentary majority is sufficient (*negative parliamentarism*). In Denmark, Norway, and Sweden, governments can be sustained as long as there is no explicit majority vote of opposition in parliament. In other words, the government is assumed

to have the confidence of the parliament until the opposite has been demonstrated. In the other countries considered here, this is not the case. In particular, to remain in office the government must maintain the active support of a parliamentary majority (for example, supporting all major legislative initiatives by the government like the budget) and not just be tolerated by parliament.

A third difference concerns whether the government can simply be voted out of office through a no–confidence vote in parliament, or whether it needs to be immediately replaced by an alternative government (the *constructive vote of no–confidence*). In all parliamentary democracies, each party represented in parliament can at any time table a vote of no–confidence. In all countries except Germany (and, since 1995, Belgium), the government has to resign if defeated by a parliamentary majority leading to a new government formation process. In Germany and, more recently, in Belgium, on the other hand, a parliamentary majority must not only depose the current government but also simultaneously elect an alternative government which must be specified before the vote takes place.

A fourth difference concerns the time horizon faced by the government. In Norway and Sweden, elections must be held at predetermined intervals (*fixed interelection period*). The constitutions of the other countries considered here, on the other hand, admit the possibility of dissolving parliament before the expiration of the parliamentary term (the duration of which varies across countries) and starting a new term by calling early elections.

Finally, if a country has a bicameral legislature (as opposed to a unicameral one), a fifth difference concerns whether the government is responsible to both chambers of parliament (*dual responsibility*), or only to the lower chamber. While Belgium, Germany, Italy, Netherlands, Norway and Sweden (until 1970) have bicameral legislatures (Denmark, Finland, Iceland and Sweden after 1970 have unicameral legislatures), only in Belgium (until 1995), Italy and Sweden (until 1970) the government has to maintain the confidence of both chambers of parliament to stay in power. Table 1 summarizes the institutional environment

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for each of the nine countries we consider, where $INVEST$, $NEG$, $CCONF$, $FIXEL$ and $DUAL$ are indicator variables that denote the presence of the investiture vote, negative parliamentarism, the constructive vote of no–confidence, a fixed interelection period and dual responsibility, respectively.

West European parliamentary democracies also differ systematically with respect to the observed duration of their government formation processes, the type (i.e., minority, minimum winning, or surplus) and size of the government coalitions that result from these processes, and the relative durability of their governments. For example, in some countries like Denmark minority governments are virtually the norm, while in Germany they are a rare occurrence. Also, surplus governments are rather frequent in Finland, while they never occur in Sweden. Similarly, governments in Italy are notoriously unstable, while Dutch governments frequently last the entire legislative period. Tables 2 and 3 illustrate these differences by reporting the average number of formation attempts, the average government duration, and the average size of the government coalition (Table 2), and the distribution of minority, minimum winning, and surplus governments (Table 3), for each of the nine countries we consider over the period 1947-1999.

Several interesting facts emerge from these tables. While minority governments account for 40% of all governments, the fraction of minority governments varies from 12% in Belgium and Germany to 83% in Denmark. A similar variation is observed in the fraction of surplus governments (which compose about one fourth of all governments), that varies from 0% in Denmark, Norway and Sweden, to 55% in Finland. These differences in the distribution of government types across countries contribute to explain the variation we observe in the average size of the government coalition, that ranges from 41% in Denmark to 62% in Belgium and the Netherlands.

Average government duration also varies a great deal across countries and ranges from a little less than a year in Italy to about 2.2 years in the Netherlands. Average government

durations over two years are also observed in Iceland, Germany, Norway, and Sweden. There is also some variation in the time it takes until a government forms. While almost all negotiations in Germany, Norway, and Sweden succeed during the first attempt, government formations in the Netherlands are on average longer (the average number of attempts is above 2) and may require as many as seven attempts. However, the cross-country variation in the duration of the government formation process is fairly limited.

These observations raise the following important questions: Can constitutional differences account for observed differences in government outcomes? Or, in other words, what are the effects of constitutions on the composition and the stability of coalition governments? Providing answers to these questions is very important for the design (or redesign) of constitutions in modern parliamentary democracies. Several "young" democracies, like the countries that emerged from the collapse of the East European block, are currently facing these issues. Some of the "older" democracies, for example Belgium and Italy, have been also experimenting with changes in their constitution. Moreover, the European unification process may lead to the formation of a "european state" whose constitution presumably would draw from the experiences of the member states. For example, the German constitutional convention created the constructive vote of no–confidence with the explicit intent of preventing unstable governments. To achieve the same goal, Belgium in 1995 amended its constitution by simultaneously eliminating the investiture vote and dual responsibility and adopting the constructive vote of no–confidence.

Answering these questions has also important economic implications. For example, empirical studies have demonstrated that political instability has a detrimental effect on economic performance and growth (see, e.g., Alesina et al. (1996) and Barro (1991)). For a parliamentary democracy, political instability means short-lived governments and long-lasting negotiations. Moreover, recent empirical studies have pointed out that the size and composition of government coalitions have systematic effects on fiscal policies (see, e.g., Persson,

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Roland and Tabellini (2003)).

In this article, we present an overview of our recent research where we address the questions we posed above and investigate the effects of constitutions on coalition governments in parliamentary democracies (Diermeier, Eraslan and Merlo (2002, 2003a, 2003b), henceforth DEM).[1] We begin our survey by describing our approach, which is based on the specification and estimation of a bargaining model of government formation, and placing it in the context of the literature. We then present a general version of our theoretical framework, followed by an example where we focus on the potential implications of dual responsibility for coalition governments in a bicameral parliamentary system. We conlcude with a description of our empirical analysis and a summary of our main findings.

## 2    A Structural Approach to the Study of Coalition Governments

The formation and termination of coalition governments is one of the most widely studied phenomena in comparative politics.[2] It is also one of the few literatures in political science and political economy with a tight connection between theoretical and empirical analysis. Until recently, most theoretical accounts used some version of cooperative game-theory as their formal methodology, relying, for example, on variants of the core as their solution concept (see, e.g., Austen-Smith and Banks (1990) and Laver and Shepsle (1990)). However, over the last decade models of coalition governments have been predominantly using non-cooperative game theory (see, e.g., Baron (1991, 1993, 1998), Diermeier and Merlo (2000), Diermeier and Stevenson (2000), Lupia and Strom (1995) and Merlo (1997)).

Most of the early theoretical work on coalition governments has focused on government

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[1]Our work contributes to a growing area of research in political economy, whose aim is to assess the political and economic consequences of political institutions (see, e.g., Besley and Coate (2003), Myerson (1993), and Persson, Roland and Tabellini (1997, 2000)). For extensive surveys of the literature see Persson and Tabellini (2000, 2003).

[2]For overviews see, e.g., Laver and Schofield (1990), Laver and Shepsle (1996) Strom (1990) and Warwick (1994).

formation, interpreting coalition governments as the outcome of an elaborate bargaining process between office- or policy-seeking parties and their leaders. However, in a recent paper Lupia and Strom (1995) argue that a similar approach can be used to study the duration of coalition governments. That is, coalition governments need to be sustained as equilibrium outcomes over time in the presence of potentially destabilizing changes to the political and economic environment, so-called "critical events" (see, e.g., Browne et. al. (1984, 1986), King et al. (1990), Merlo (1998) and Warwick (1994)).

On the one hand, this approach marks a promising shift in the study of cabinet durations. In particular, the specification of explicit models of inter-party bargaining is likely to focus attention on the role of institutional features of the bargaining environment in determining cabinet failure rather than on a list of cabinet attributes (such as the number of formation attempts) or general measures of the political environment (such as the number of parties represented in parliament) that have been emphasized in the empirical literature on cabinet duration (see, e.g., King et al. (1990), Strom (1990) and Warwick (1994)). This may open the door to a formal study of parliamentary constitutions and their consequences for the quality of governance.

On the other hand, the bargaining approach raises a number of challenging methodological issues. First, Diermeier and Stevenson (2000) show that testing the Lupia-Strom model requires careful specifications of the stochastic model that preclude the usage of "off-the-shelve" event study methods. Second, Merlo (1997) points out that changing expectations about government duration (due to external events such as the release of macro-economic data) may lead party leaders to delay the formation of a government. Hence, governments that actually form should be viewed as the result of strategic selection by the members of the government coalition. Third, as Diermeier and Merlo (2000) show in a game-theoretic model, expectations about government duration may also influence which government is chosen in the first place. Consider the example of a formateur who has to decide whether to form

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a single-party minority government or to invite another party to form a minimal winning coalition. In this case the formateur needs to identify the optimal trade-off between the degree of control over ministries (which is higher in the case of a single-party government) and the government's expected longevity (which is smaller for minority governments).

Together these results suggest that government type, formation time, and government duration are *all simultaneously determined in equilibrium* subject to institutional constraints. That is, taking the concept of governments-as-equilibria seriously requires a radical departure from existing empirical approaches that typically rely on reduced-form specifications.

In DEM, we propose an alternative, structural approach and develop a theoretical and empirical framework to assess quantitatively the consequences of constitutional features of parliamentary democracy for the formation and dissolution of coalition governments. Our approach relies on the structural estimation of a game-theoretic model. The methodology we use consists of specifying a bargaining model of government formation, estimating the model's parameters, assessing the ability of the model to account for key features of the data, and then using the estimated structural model to conduct (counterfactual) experiments of comparative constitutional design. This approach allows us to interpret important features of the data as equilibrium phenomena and to assess the equilibrium responses of the outcomes of the government formation process to changes in the institutional environment.

## 3 The Theoretical Framework

We model government formation as a multi-stage stochastic bargaining game. Let $N = \{1, ..., n\}$ denote the set of parties represented in the parliament and let $\pi^C \in \Pi^C = \{(\pi_1^C, ..., \pi_n^C) : \pi_i^C \in [0, 1], \sum_{i \in N} \pi_i^C = 1\}$ denote the vector of the parties' relative shares in parliamentary chamber $C \in \{H, S\}$, where $H$ denotes the "House" (lower chamber) and $S$ denotes the "Senate" (upper chamber).[3] If the parliament has only one chamber (the House), or if the constitution prescribes that the government is only responsible to the House (even

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[3]The shares are determined by the outcome of a general election which is not modelled here.

when the parliament is bicameral), then we set $\pi^S = (0, ..., 0)$.[4]

Each party $i \in N$ has linear von Neumann-Morgenstern preferences over the benefits from holding office $x_i \in \mathbb{R}_+$ and the composition of the government coalition $G \subseteq N$,

$$U_i(x_i, G) = x_i + u_i^G, \tag{1}$$

where

$$u_i^G = \begin{cases} \varepsilon_i^G & \text{if} \quad i \in G \\ \eta_i^G & \text{if} \quad i \notin G, \end{cases} \tag{2}$$

$\varepsilon_i^G > \eta_i^G$, $\varepsilon_i^G, \eta_i^G \in \mathbb{R}$. This specification captures the intuition that parties care both about the benefits from being in the government coalition (and, for example, controlling government portfolios) and the identity of their coalition partners. In particular, $\varepsilon_i^G$ can be thought of as the utility that a party in the government coalition obtains from implementing government policies. The policies implemented by a government depend on the coalition partners' relative preferences over policy outcomes and on the institutional mechanisms through which policies are determined. In our analysis, we abstract from these aspects and summarize all policy related considerations in equation (2).[5] The assumption that $\varepsilon_i^G > \eta_i^G$ for all $i \in N$ and for all $G \subseteq N$, implies that, *ceteris paribus*, parties always prefer to be included in the government coalition rather than being excluded. We let $\beta \in (0, 1)$ denote the common discount factor reflecting the parties' degree of impatience.

Our analysis begins after an election or the resignation of an incumbent government (possibly because of a general election or because of a no-confidence vote in the parliament). We let $\overline{T}$ denote the *time horizon* to the next scheduled election (which represents the maximum amount of time a new government could remain in office) and $s \in \Sigma$ denote the

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[4]In the case of bicameral parliaments without dual responsibility (like, for example, Germany or the Netherlands), the upper chamber only plays a legislative role, but does not participate either in the appointment or the dismissal of the executive.

[5]For a richer, spatial model of government formation where government policies are endogenously determined, see Diermeier and Merlo (2000).

current *state of the world* (which summarizes the current political and economic situation). While $\overline{T}$ is constant, we assume that the state of the world evolves over time according to an independently and identically distributed (i.i.d.) stochastic process $\sigma$ with state space $\Sigma$ and probability distribution function $F_\sigma(\cdot)$.

After the resignation of an incumbent government, the head of state chooses one of the parties represented in the parliament to try to form a new government. We refer to the selected party $\mathbb{k} \in N$ as the *formateur*. Following Laver and Shepsle (1996) and Baron (1991, 1993), we assume that the choice of a formateur is non-partisan and the head of state is non-strategic.[6] In particular, we assume that each party $i \in N$ is selected to be a formateur with probability

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p_i(\pi^H, \pi^S, \mathbb{k}_{-1}) = \begin{cases} 1 & \text{if } \pi_i^H > 0.5 \text{ or } \pi_i^S > 0.5 \text{ and } \pi_j^H \leq 0.5 \text{ , } \forall j \in N \\ \frac{\exp(\alpha_0 \pi_i^H + \alpha_1 I_i)}{\sum_{j \in N} \exp(\alpha_0 \pi_j^H + \alpha_1 I_j)} & \text{if } \pi_j^C \leq 0.5 \text{ , } \forall j \in N, \text{ for } C = H, S \\ 0 & \text{if } \exists \, j \neq i : \pi_j^C > 0.5, \text{ for } C = H \text{ or } C = S \end{cases} ,
$$

(3)

where $\mathbb{k}_{-1} \in N$ denotes the party of the former prime minister, and $I_i$ is a dummy variable that takes the value 1 if $\mathbb{k}_{-1} = i$ and zero otherwise. This specification captures the intuition that although relatively larger parties may be more likely to be selected as a formateur than relatively smaller parties, there may be an incumbency bias. It also reflects the fact that if a party has an absolute majority in either chamber of the parliament (where an absolute majority in the Senate is relevant only if the constitution specifies dual responsibility), then it has to be selected as the formateur.[7]

The formateur then chooses a *proto-coalition* $D \in \Delta_\mathbb{k}$, where $\Delta_\mathbb{k}$ denotes the set of subsets

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[6]Note that most constitutions are silent with respect to the rules for selecting a formateur, which are generally reflected in unwritten conventions and norms. For an empirical analysis of the selection of formateurs see Diermeier and Merlo (2003).

[7]Note that there are no cases in the data where different parties have absolute majorities in different chambers.

of $N$ which contain $\Bbbk$.[8] Intuitively, a proto-coalition is a set of parties that agree to talk to each other about forming a government together. Let $\pi^D \equiv (\sum_{i \in D} \pi_i^H, \sum_{i \in D} \pi_i^S)$ denote the *size* of proto-coalition $D$. The proto-coalition bargains over the formation of a new government, which determines the allocation of government portfolios among the coalition members, $x^D = (x_i^D)_{i \in D} \in R_+^{|D|}$. Following Merlo (1997), we assume that cabinet portfolios generate a (perfectly divisible) unit level of surplus in every period a government is in power and we let $T^D \in [0, \overline{T}]$ denote the duration of a government formed by proto-coalition $D$.

Government duration in parliamentary democracies is not fixed. Rather, it depends on institutional factors (which include whether the government has dual responsibility), the relative size of the government coalition, the time horizon to the next election, the state of the political and economic system at the time a government forms, and political and economic events occurring while a government is in power (see, e.g., King et al. (1989), Merlo (1998), and Warwick (1994)). Let $Q$ denote the vector of institutional characteristics (possibly) affecting government duration (i.e., the investiture vote, positive parliamentarism, the constructive vote of no–confidence, a fixed interelection period and dual responsibility). Hence, $T^D$ can be represented as a random variable with density function $f(t^D|s, \overline{T}, Q, \pi^D)$ over the support $[0, \overline{T}]$.[9]

Given the current state $s$ and the vector of (time-invariant) characteristics $(\overline{T}, Q, \pi^D)$, let

$$y^D(s, \overline{T}, Q, \pi^D) \equiv E[T^D|s, \overline{T}, Q, \pi^D] \tag{4}$$

denote the *cake* to be divided among the members of the proto-coalition $D$ if they agree to form a government in that state. That is, $y^D(\cdot) \in (0, \overline{T})$ represents the total expected office

[8]Our assumption that parties always prefer to be included in the government coalition immediately implies that the formateur party will never propose a proto-coalition that does not include itself.

[9]Here, we treat government dissolution as exogenous. For a theoretical model where the decision of dissolving a government is endogenous, see Diermeier and Merlo (2000).

benefits from forming a government in state $s$. Given proto-coalition $D$, for any state $s$, let

$$X^D(s, \overline{T}, Q, \pi^D) \equiv \left\{ x^D \in I\!R_+^{|D|} : \sum_{i \in D} x_i^D \leq y^D(s; \overline{T}, Q, \pi^D) \right\} \tag{5}$$

denote the set of feasible payoff vectors to be allocated in that state, where $x_i^D$ is the amount of cake awarded by coalition $D$ to party $i \in D$.

The proto-coalition bargaining game proceeds as follows. Given state $s$, the formateur chooses either to pass or to propose an allocation $x^D \in X^D(s, \overline{T}, Q, \pi^D)$. If $\Bbbk$ proposes an allocation, all the other parties in the proto-coalition sequentially respond by either accepting or rejecting the proposal until either some party has rejected the offer or all parties in $D$ have accepted it. If the proposal is unanimously accepted by the parties in the proto-coalition, a government is inaugurated and the game ends. If no proposal is offered and accepted by all parties in the proto-coalition, state $s'$ is realized according to the stochastic process $\sigma$ and party $i \in D$ is selected to make a government proposal with probability

$$\widetilde{p}_i(\pi^H, \pi^S, D) = \begin{cases} 1 & \text{if } \pi_i^H > 0.5 \text{ or } \pi_i^S > 0.5 \text{ and } \pi_j^H \leq 0.5 \ , \ \forall j \in D \\ \frac{\exp(\alpha_2 \pi_i^H)}{\sum_{j \in D} \exp(\alpha_2 \pi_j^H)} & \text{if } \pi_j^C \leq 0.5 \ , \ \forall j \in N, \text{ for } C = H, S \\ 0 & \text{if } \exists \ j \neq i : \pi_j^C > 0.5, \text{ for } C = H \text{ or } C = S \end{cases} , \tag{6}$$

Let $\ell \in D$ denote the identity of the proposer. The bargaining process continues until some proposed allocation is unanimously accepted by the parties in the proto-coalition.

An outcome of this bargaining game $(\tau^D, \chi^D)$ may be defined as a stopping time $\tau^D = 0, 1, ...$ and a $|D|$–dimensional random vector $\chi^D$ which satisfies $\chi^D \in X^D(\sigma_{\tau^D}, \overline{T}, Q, \pi^D)$ if $\tau^D < +\infty$ and $\chi^D = 0$ otherwise. Given a realization of $\sigma$, $\tau^D$ denotes the period in which a proposal is accepted by proto-coalition $D$, and $\chi^D$ denotes the proposed allocation that is accepted in state $\sigma_{\tau^D}$. Define $\beta^\infty = 0$. Then an outcome $(\tau^D, \chi^D)$ implies a von Neumann-Morgenstern payoff to each party $i \in D$ equal to $E[\beta^{\tau^D} \chi_i^D] + \varepsilon_i^D$, and a payoff to each party $j \in N \backslash D$ equal to $\eta_j^D$. Let

$$V_\Bbbk(D, \overline{T}, Q, \pi^D) \equiv E[\beta^{\tau^D} \chi_i^D]. \tag{7}$$

For any formateur $\Bbbk \in N$, each potential proto-coalition $D \in \Delta_\Bbbk$ is associated with an expected payoff for party $\Bbbk$

$$W_\Bbbk(D, \overline{T}, Q, \pi^D) = V_\Bbbk(D, \overline{T}, Q, \pi^D) + \varepsilon_\Bbbk^D. \tag{8}$$

Hence, party $\Bbbk$ chooses the proto-coalition to solve

$$\max_{D \in \Delta_\Bbbk} W_\Bbbk(D, \overline{T}, Q, \pi^D). \tag{9}$$

Let $D_\Bbbk \in \Delta_\Bbbk$ denote the solution to this maximization problem.

The characterization of the equilibrium of this model relies on the general results for stochastic bargaining games contained in Merlo and Wilson (1995, 1998). In particular, the unique stationary subgame perfect equilibrium of this game has the following features. First, the equilibrium agreement rule possesses a *reservation property*: In any state $s$, coalition $D$ agrees in that state if and only if $y^D(s, \overline{T}, Q, \pi^D) \geq y^*(D, \overline{T}, Q, \pi^D)$, where $y^*(\cdot)$ solves

$$y^*(D, \overline{T}, Q, \pi^D) = \beta \int \max\{y^D(s', \overline{T}, Q, \pi^D), y^*(D, \overline{T}, Q, \pi^D)\} dF_\sigma(s'). \tag{10}$$

Hence, delays can occur in equilibrium. During proto-coalition bargaining, the reservation property implies a trade-off between delay in the formation process and expected duration. Intuitively, coalitions may want to wait for a favorable state of the world that is associated with a longer expected government duration and hence a larger cake. On the other hand, the presence of discounting makes delay costly. In equilibrium, agreement is reached when these opposite incentives are balanced. Notice that the role of delays is to "screen out" relatively unstable governments. How much screening occurs in equilibrium depends on how impatient parties are (measured by $\beta$), their institutional environment (summarized by $Q$), the length of the time horizon to the next scheduled election (given by $\overline{T}$), the size and composition of the proto-coalition (equal to $\pi^D$ and $D$, respectively), and the uncertainty about the future (summarized by the stochastic process $\sigma$).

Second, the equilibrium of the bargaining game satisfies the *separation principle* (Merlo and Wilson (1998)): Any equilibrium payoff vector must be Pareto efficient, and the set

of states where parties agree must be independent of the proposer's identity. This implies that in the proto-coalition bargaining stage, distribution and efficiency considerations are independent and delays are optimal from the point of view of the parties in the proto-coalition. In particular, perpetual disagreement is never an equilibrium, and for any possible proto-coalition, agreement is reached within a finite amount of time. Hence, for any $D \in \Delta_{\Bbbk}$, if $D$ is chosen as the proto-coalition, then $D$ forms the government.

Third, for any formateur $\Bbbk \in N$ and for any potential proto-coalition $D \in \Delta_{\Bbbk}$, the ex-ante expected equilibrium payoff to party $\Bbbk$ is given by

$$W_{\Bbbk}(D, \overline{T}, Q, \pi^D) = \left( \frac{1 - \beta(1 - \widetilde{p}_{\Bbbk}(\pi^H, \pi^S, D))}{\beta} \right) y^*(D, \overline{T}, Q, \pi^D) + \varepsilon_{\Bbbk}^D. \qquad (11)$$

Hence, we obtain that for any formateur $\Bbbk \in N$, the equilibrium proto-coalition choice $D_{\Bbbk} \in \Delta_{\Bbbk}$ is given by

$$D_{\Bbbk} = \arg \max_{D \in \Delta_{\Bbbk}} \left( \frac{1 - \beta(1 - \widetilde{p}_{\Bbbk}(\pi^H, \pi^S, D))}{\beta} \right) y^*(D, \overline{T}, Q, \pi^D) + \varepsilon_{\Bbbk}^D, \qquad (12)$$

and $D_{\Bbbk}$ forms the government (that is, $G = D_{\Bbbk}$).

When choosing a government coalition, a formateur faces a trade-off between "control" (i.e., its own share of the cake) and "durability" (i.e., the overall size of the cake). That is, on the one hand, relatively larger coalitions may be associated with longer expected durations and hence relatively larger cakes. On the other hand, because of proto-coalition bargaining, by including additional parties in its coalition the formateur party would receive a smaller share of the cake. The equilibrium coalition choice depends on the terms of this trade-off, which in turn, given the institutional environment $Q$, depend on the relative desirability of the different options $y^*(\cdot)$, the degree of impatience of the formateur $\beta$, its relative "bargaining power" $\widetilde{p}_{\Bbbk}(\cdot)$, and the formateur's tastes for its coalition partners $\varepsilon_{\Bbbk}^D$.

## 4    An Example: Bicameralism and Coalition Governments

To explore the intuition of the model and illustrate some of the properties of the equilibrium, we present a simple example. Consider a parliamentary democracy with a bi-

cameral legislature where there are three parties, $N = \{1, 2, 3\}$ with $\pi^H = (1/5, 1/5, 3/5)$ and $\pi^S = (1/5, 3/5, 1/5)$, and party 1 is the formateur. For each possible proto-coalition $D \in \Delta_1 = \{\{1\}, \{1, 2\}, \{1, 3\}, \{1, 2, 3\}\}$, if agreement is not reached on the formateur's proposal, the probability that party 1 is selected to make the next proposal is given by $\widetilde{p}_1 = 1/|D|$. Let $\varepsilon_1^{\{1\}} = \varepsilon_1^{\{1,2\}} = 1/2$ and $\varepsilon_1^{\{1,3\}} = \varepsilon_1^{\{1,2,3\}} = 0$. Note that coalition $\{1\}$ has minority status in both chambers, coalitions $\{1, 2\}$ and $\{1, 3\}$ have minority status in one chamber but are minimum winning majority coalitions in the other chamber, and coalition $\{1, 2, 3\}$ is a surplus majority coalition in both chambers.

The time horizon to the next election is five periods, $\overline{T} = 5$. There are two possible states of the world, $\Sigma = \{b, g\}$. Each state is realized with equal probability, $\Pr(\sigma = b) = \Pr(\sigma = g) = 1/2$. Consider an institutional environment with dual responsibility and suppose that if $s = b$, then governments that have minority status in both chambers are expected to last one period, governments that have minority status in one chamber but majority status in the other chamber are expected to last two periods, and governments that have majority status in both chambers are expected to last three periods: that is, $y^{\{1\}}(b) = 1$ and $y^{\{1,2\}}(b) = y^{\{1,3\}}(b) = 2$ and $y^{\{1,2,3\}}(b) = 3$. If, on the other hand, $s = g$, then each government's expected duration is increased by one period: that is, $y^{\{1\}}(g) = 2$, $y^{\{1,2\}}(g) = y^{\{1,3\}}(g) = 3$, and $y^{\{1,2,3\}}(g) = 4$. This specification is intended to capture an environment where both a government's majority status and the state of the world affect the expected stability of coalition governments.[10]

We begin by analyzing the outcome of proto-coalition bargaining for every possible proto-coalition $D \in \Delta_1$. Consider first the case where $D = \{1\}$. Using equation (10) above, it is easy to verify that if $\beta \leq 2/3$, then $y^*(\{1\}) = 3\beta/2 \leq y^{\{1\}}(b)$, which implies that delays never occur. If, on the other hand, $\beta > 2/3$, then $y^*(\{1\}) = 2\beta/(2 - \beta) > y^{\{1\}}(b)$, which implies that delays occur when $s = b$. Hence, using equation (11) above, the equilibrium

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[10]See King et al. (1990), Merlo (1997) and Warwick (1994) for empirical evidence.

payoff to party 1 from choosing proto-coalition $\{1\}$ is equal to

$$W_1(\{1\}) = \begin{cases} 2 & \text{if } \beta \leq \frac{2}{3} \\ \frac{2}{2-\beta} + \frac{1}{2} & \text{if } \beta > \frac{2}{3} \end{cases}.$$

Next, consider the cases where $D = \{1,2\}$ or $D = \{1,3\}$. It is easy to verify that if $\beta \leq 4/5$, then $y^*(\{1,2\}) = y^*(\{1,3\}) = 5\beta/2 \leq y^{\{1,2\}}(b) = y^{\{1,3\}}(b)$, which implies that agreement occurs in both states of the world. If, on the other hand, $\beta > 4/5$, then $y^*(\{1,2\}) = y^*(\{1,3\}) = 3\beta/(2-\beta) > y^{\{1,2\}}(b) = y^{\{1,3\}}(b)$, which implies that agreement only occurs when $s = g$. Hence, the equilibrium payoff to party 1 from choosing proto-coalition $\{1,2\}$ is equal to

$$W_1(\{1,2\}) = \begin{cases} \frac{5(2-\beta)}{4} + \frac{1}{2} & \text{if } \beta \leq \frac{4}{5} \\ 2 & \text{if } \beta > \frac{4}{5} \end{cases},$$

and its equilibrium payoff from choosing proto-coalition $\{1,3\}$ is equal to

$$W_1(\{1,3\}) = \begin{cases} \frac{5(2-\beta)}{4} & \text{if } \beta \leq \frac{4}{5} \\ \frac{3}{2} & \text{if } \beta > \frac{4}{5} \end{cases}.$$

Finally, consider the case where $D = \{1,2,3\}$. It is easy to verify that if $\beta \leq 6/7$, then $y^*(\{1,2,3\}) = 7\beta/2 \leq y^{\{1,2,3\}}(b)$, which implies that agreement occurs in both states of the world. If, on the other hand, $\beta > 6/7$, then $y^*(\{1,2,3\}) = 4\beta/(2-\beta) > y^{\{1,2,3\}}(b)$, which implies that agreement only occurs when $s = g$. Hence, the equilibrium payoff to party 1 from choosing proto-coalition $\{1,2,3\}$ is equal to

$$W_1(\{1,2,3\}) = \begin{cases} \frac{7(3-2\beta)}{6} & \text{if } \beta \leq \frac{6}{7} \\ \frac{4(3-2\beta)}{6-3\beta} & \text{if } \beta > \frac{6}{7} \end{cases}.$$

The equilibrium payoffs to the formateur party 1 associated with all possible proto-coalitions are depicted in Figure 1 as functions of the parameter $\beta$.

Hence, the equilibrium proto-coalition choice of the formateur party 1 is given by[11]

$$
D_1 = \begin{cases}
\{1,2,3\} & \text{if} \quad \beta \in (0, 0.46) \\
\{1,2\} & \text{if} \quad \beta \in (0.46, 0.74) \\
\{1\} & \text{if} \quad \beta \in (0.74, 1)
\end{cases} \cdot
$$

A relatively high degree of impatience would induce the formateur to choose a surplus coalition that would immediately agree to form the government.[12] On average, surplus governments would therefore be observed to last 3.5 periods. For intermediate levels of impatience, on the other hand, the formateur would choose a coalition that has minority status in one chamber but is a minimum winning majority coalition in the other chamber. Even in this case, however, the process of government formation would involve no delay and would produce governments that would last, on average, 2.5 periods.[13] Finally, for sufficiently low degrees of impatience, the formateur would choose a coalition that has minority status in both chambers. This government would continue negotiating until the "good" state of the world is realized. Thus, it would last, on average, 2 periods.

The example illustrates the two equilibrium selection effects captured by our model. First, when $\beta > 2/3$, the least durable minority governments (that is, minority governments that come to power in a "bad" state of the world) are "screened out" in equilibrium and would never form. This is a consequence of efficient proto-coalition bargaining. Second, when $\beta \in (0.46, 0.74)$, although a more durable option is always available (that is, a coalition with majority status in both chambers), the formateur chooses a proto-coalition with a smaller expected duration (and no majority status in one of the two chambers) because that increases its share of office benefits. This is an example of the fundamental trade-off described above between durability (i.e., larger coalitions are typically more durable and

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[11] Since ties are zero probability events, we are ignoring here the event of a tie between two alternatives.

[12] Notice that when $D = \{1,2,3\}$ and $\beta \in (0, 0.46)$ agreement occurs in both states of the world.

[13] Notice that $\{1,3\}$ is never chosen in equilibrium because its expected duration conditional on the state of the world is identical to the one of $\{1,2\}$, but party 1's preferences induce it to prefer $\{1,2\}$.

hence are associated with larger cakes) and control (i.e., larger coalitions imply smaller shares of the cake for each coalition member) which drives the equilibrium selection of government coalitions subject to institutional constraints. Of course, both effects may work in consort. When $\beta$ is relatively high (i.e., $\beta \in (0.74, 1)$), because short-lived minority governments are screened out in equilibrium, a minority proto-coalition becomes relatively more attractive compared to proto-coalitions with (at least partial) majority status.

To understand the role played by dual responsibility on the equilibrium selection of government coalitions, consider now a different institutional environment without dual responsibility such that $y^{\{1\}}(b) = y^{\{1,2\}}(b) = 2$, $y^{\{1,3\}}(b) = y^{\{1,2,3\}}(b) = 3$, $y^{\{1\}}(g) = y^{\{1,2\}}(g) = 3$, and $y^{\{1,3\}}(g) = y^{\{1,2,3\}}(g) = 4$, while holding everything else constant. Since the seat shares in the Senate are no longer relevant to determine the majority status of government coalitions, coalitions $\{1\}$ and $\{1, 2\}$ are now both minority coalitions, while coalitions $\{1, 3\}$ and $\{1, 2, 3\}$ are both majority coalitions. Relative to the previous case, it is now "as if" all coalitions have majority status in the Senate. Hence, for example, $\{1, 2, 3\}$ now simply corresponds to a surplus majority coalition. As in the case of dual responsibility, this specification is intended to capture an environment that is consistent with some basic empirical regularities about coalition duration. For example, surplus majority coalitions do not necessarily last longer than minimal winning coalitions.[14] Also, without dual responsibility the expected duration of each possible coalition is likely to be longer.[15]

As above, we begin by analyzing the outcome of proto-coalition bargaining for every possible proto-coalition $D \in \Delta_1$. Consider first the case where $D = \{1\}$ or $D = \{1, 2\}$. It is easy to verify that if $\beta \leq 4/5$, then $y^*(\{1\}) = y^*(\{1, 2\}) = 5\beta/2 \leq y^{\{1\}}(b) = y^{\{1,2\}}(b)$, which implies that delays never occur. If, on the other hand, $\beta > 4/5$, then $y^*(\{1\}) = y^*(\{1, 2\}) = 3\beta/(2 - \beta) > y^{\{1\}}(b) = y^{\{1,2\}}(b)$, which implies that delays occur when $s = b$. Hence, the

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[14]See, e.g., Merlo (1997).

[15]See, e.g., Tsebelis (2000).

equilibrium payoff to party 1 from choosing proto-coalition $\{1\}$ is equal to

$$W_1(\{1\}) = \begin{cases} 3 & \text{if } \beta \leq \frac{4}{5} \\ \frac{3}{2-\beta} + \frac{1}{2} & \text{if } \beta > \frac{4}{5} \end{cases}.$$

and its payoff from choosing proto-coalition $\{1,2\}$ is equal to

$$W_1(\{1,2\}) = \begin{cases} \frac{5(2-\beta)}{4} + \frac{1}{2} & \text{if } \beta \leq \frac{4}{5} \\ 2 & \text{if } \beta > \frac{4}{5} \end{cases}.$$

Next, consider the cases where $D = \{1,3\}$ or $D = \{1,2,3\}$. It is easy to verify that if $\beta \leq 6/7$, then $y^*(\{1,3\}) = y^*(\{1,2,3\}) = 7\beta/2 \leq y^{\{1,3\}}(b) = y^{\{1,2,3\}}(b)$, which implies that agreement occurs in both states of the world. If, on the other hand, $\beta > 6/7$, then $y^*(\{1,3\}) = y^*(\{1,2,3\}) = 4\beta/(2-\beta) > y^{\{1,3\}}(b) = y^{\{1,2,3\}}(b)$, which implies that agreement only occurs when $s = g$. Hence, the equilibrium payoff to party 1 from choosing proto-coalition $\{1,3\}$ is equal to

$$W_1(\{1,3\}) = \begin{cases} \frac{7(2-\beta)}{4} & \text{if } \beta \leq \frac{6}{7} \\ 2 & \text{if } \beta > \frac{6}{7} \end{cases},$$

and its equilibrium payoff from choosing proto-coalition $\{1,2,3\}$ is equal to

$$W_1(\{1,2,3\}) = \begin{cases} \frac{7(3-2\beta)}{6} & \text{if } \beta \leq \frac{6}{7} \\ \frac{4(3-2\beta)}{6-3\beta} & \text{if } \beta > \frac{6}{7} \end{cases}.$$

The equilibrium payoffs to the formateur party 1 associated with all possible proto-coalitions are depicted in Figure 2 as functions of the parameter $\beta$.

Thus, in this case, the equilibrium proto-coalition choice of the formateur party 1 is given by

$$D_1 = \begin{cases} \{1,3\} & \text{if } \beta \in (0, 0.29) \\ \{1\} & \text{if } \beta \in (0.29, 1) \end{cases}.$$

Notice that in this case, the surplus coalition $\{1,2,3\}$ is never an equilibrium proto-coalition choice of the formateur party 1 for any value of $\beta$. This follows from the fact that without

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dual responsibility, adding party 2 to the coalition does not increase expected duration, but (because of proto-coalition bargaining) it decreases the formateur's share of office benefits. Hence, $\{1, 2, 3\}$ is dominated by $\{1, 3\}$. For a similar reason $\{1, 2\}$ is never selected, since in the absence of dual responsibility both $\{1, 2\}$ and $\{1\}$ are minority coalitions. Note also, that the range of values of $\beta$ where the minority option $\{1\}$ is chosen in equilibrium is larger. Hence, in this example, removing dual responsibility significantly reduces the occurrence of surplus governments and increases the occurrence of minority governments.

Turning our attention to government duration, note that in the case where $\beta < 0.29$, where a majority government is optimal, there is no proto-coalition "screening". That is, $\{1, 3\}$ would be observed to last 3.5 periods on average. For $\beta > 0.8$, minority governments are optimal with proto-coalition screening, resulting in an average duration of 3 periods. For $\beta \in (0.29, 0.8)$, minority governments are also optimal but it is not worthwhile for the formateur to delay government formation, thus resulting in an average duration of 2.5 periods. The effect of dual responsibility on government duration is illustrated in Figure 3. Depending on the parameters of the model, eliminating dual responsibility can either have no effect on government duration (e.g., for $\beta < 0.29$), it can increase government duration (e.g., for $\beta > 0.46$), or it can even decrease government duration (e.g., for $\beta \in (0.29, 0.46)$). This last possibility illustrates the potentially powerful consequences of accounting for equilibrium responses by strategic parties. If $\beta \in (0.29, 0.46)$, the formateur party 1 would choose to be in a minority government rather than in the surplus coalition $\{1, 2, 3\}$ if dual responsibility was abandoned.

The example illustrates an additional equilibrium effect captured by our model. Above, we described the model's fundamental trade-off between durability (i.e., larger coalitions are typically more durable and hence are associated with larger cakes) and control (i.e., larger coalitions imply smaller shares of the cake for each coalition member) which drives the equilibrium selection of government coalitions subject to the institutional constraints.

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The terms of this trade-off depend crucially on the relative durability of the different options which, in turn, depends on the institutional environment where government formation takes place. Changes in the institutional environment induce changes in the terms of the trade-off which trigger an equilibrium response in the selection of the type of government coalitions that form and their relative stability. When the government is responsible both to the House and the Senate, a vote of no-confidence in either chamber of parliament is sufficient to terminate the government. The equilibrium response to this institutional constraint is to from larger (surplus) coalitions (possibly constituting a majority in both chambers), to achieve the desired level of durability at the cost of a loss of control on the part of the formateur. Removing dual responsibility, while holding everything else the same, removes one source of instability and makes it possible to achieve similar levels of durability by "replacing" larger coalitions with smaller coalitions (*equilibrium replacement effect*).

As evidenced in this example, our model is capable of addressing the issues we discussed in the introduction. However, it should also be clear from the example that the predictions of the model critically depend on the values of the model's parameters. In order to assess quantitatively the effects of dual responsibility (or any other constitutional feature) on the formation and dissolution of coalition governments we need to estimate the structural model.

## 5    The Empirical Framework

Our sample of observations consists of 255 governments in 9 West European countries over the period 1947–1999: Belgium (34 governments), Denmark (30 governments), Finland (29 governments), Germany (24 governments), Iceland (21 governments), Italy (46 governments), Netherlands (20 governments), Norway (25 governments), and Sweden (26 governments). An observation in the sample is defined by the identity of the formateur party, $\Bbbk$, the composition of the proto-coalition, $D_{\Bbbk}$, the duration of the negotiation over the formation of a new government (i.e., the number of attempts), $\tau^{D_{\Bbbk}}$, the sequence of proposers (one for each attempt) if the formateur does not succeed to form the government at the first attempt,

$\ell_2, ..., \ell_{\tau^{D_\Bbbk}}$, and the duration of the government following that negotiation (i.e., the number of days the government remains in power), $t^{D_\Bbbk}$. For each element in the sample we also observe the vector of constitutional characteristics, $Q = (INVEST, NEG, CCONF, FIXEL, DUAL)$, the time horizon to the next scheduled election, $\overline{T}$, the set of parties represented in the parliament, $N$, the vector of their relative seat shares, $\pi^H$ and $\pi^S$, and the party of the former prime minister, $\Bbbk_{-1}$.

*Keesings Record of World Events* (1944–present) was used to collect information on the number of attempts for each government formation, the identity of the proposer on each attempt, the time horizon to the next election, and the duration of the government following each negotiation. The list of parties represented in the parliament for each country and their shares of parliamentary seats at the time of each negotiation over the formation of a new government was taken from Mackie and Rose (1990) and, for later years in the sample, from Keesings, the *European Journal of Political Research*, and the *Lijphart Elections Archives*.[16] Constitutional characteristics were obtained from Lijphart (1984), Muller and Strom (2000), and from the constitution of each country.[17]

The theoretical model described in Section 3 implies a probability distribution over endogenous variables conditional on exogenous variables given the model's parameters (i.e., a likelihood function), and can therefore be estimated by maximum likelihood using the data available. The relationship between the theoretical and the empirical model can be explained as follows. In the bargaining model described in Section 3, we specified the cake a generic proto-coalition $D$ bargains over in any given period, $y^D$, to be equal to the expected government duration conditional on the state of the world in that period, $s$, given the vector of (time-invariant) characteristics, $(\overline{T}, Q, \pi^D)$. Also, we characterized the conditions under which agreement occurs in terms of a reservation rule on the size of the current cake. Hence,

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[16]The archive is available online at http://dodgson.ucsd.edu/lij.

[17]For details on the data see DEM.

from the perspective of the political parties that observe the cakes, the sequence of events in a negotiation is deterministic, since they agree to form a government as soon as the current cake is above a threshold that depends only on their expectation about future states of the world and hence future cakes. The only uncertainty concerns the actual duration of the government after it is formed: $T^D$. The source for this uncertainty are political events (such as a scandal or other critical events) occurring while the government is in power. Thus, $T^D$ is a random variable with conditional distribution function $F_T(t^D|y^D; \overline{T}, Q, \pi^D)$. We (the econometricians), however, do not observe the state of the world $s$.[18] Hence, from the perspective of the econometrician, the cake $y^D(s, \overline{T}, Q, \pi^D) \equiv E[T^D|s, \overline{T}, Q, \pi^D]$ is also a random variable with conditional distribution function $F_y(y^D|\overline{T}, Q, \pi^D)$, which implies that the sequence of events in a negotiation is probabilistic.

Let us now consider the decision problem faced by the formateur party $\Bbbk$. For each possible coalition $D \in \Delta_{\Bbbk}$, party $\Bbbk$ can compute its expected equilibrium payoff if $D$ is chosen as the proto-coalition and bargains over the formation of a new government. The formateur's expected payoff depends on the expected outcome of the bargaining process as well as the formateur's tastes for its coalition partners, $\varepsilon_{\Bbbk}^D$. Hence, from the perspective of the formateur party that knows its tastes, the optimal coalition choice is deterministic. We (the econometricians), however, do not observe the formateur's tastes for its coalition partners, $\varepsilon_{\Bbbk}^D$. Hence, as before, from the perspective of the econometrician, $\varepsilon_{\Bbbk}^D$ is a random variable with distribution function $F_\varepsilon(\varepsilon_{\Bbbk}^D)$, which implies that the formateur's decision problem is probabilistic.

The likelihood function is then obtained by specifying parametric functional forms for the functions $F_T(t^D|y^D; \overline{T}, Q, \pi^D)$, $F_y(y^D|\overline{T}, Q, \pi^D)$ and $F_\varepsilon(\varepsilon_{\Bbbk}^D)$. The contribution to the likelihood function of each observation in the sample is equal to the probability of observ-

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[18] In particular, we do not observe all the relevant elements in the parties' information set when they form their expectations about government durations. Thus, we do not observe the cake.

ing the vector of (endogenous) events $(\mathbb{k}, D_{\mathbb{k}}, \tau^{D_{\mathbb{k}}}, \ell_2, ..., \ell_{\tau^{D_{\mathbb{k}}}}, t^{D_{\mathbb{k}}})$ conditional on the vector of (exogenous) characteristics $(\overline{T}, Q, N, \pi, \mathbb{k}_{-1})$, given the vector of the model's parameters $\theta = (\alpha_0, \alpha_1, \alpha_2, \beta, \rho, F_y, F_T)$. Given the structure of our model and our equilibrium characterization, this probability can be computed and the parameter vector $\theta$ can be estimated by maximum likelihood using the data described above.[19]

## 6    Empirical Results

As we discussed in Section 2, the estimated structural model can be used to conduct (counterfactual) experiments of comparative constitutional design and assess the effects of specific institutional features of parliamentary democracies (i.e., the investiture vote, positive parliamentarism, the constructive vote of no-confidence, a fixed interelection period and dual responsibility), on the formation and dissolution of coalition governments.[20]

Our main findings can be summarized as follows. The first set of findings concerns the effects of constitutions on coalition governments in parliamentary democracies with unicameral legislatures. We find that the most stable political system (i.e., the political system with the shortest government formation duration and the longest government duration) has a positive form of parliamentarism with the constructive vote of no-confidence, no investiture vote, and a fixed interelection period. At the opposite end of the spectrum, the least stable political system (i.e., the political system with the longest government formation duration and the shortest government duration) has a positive form of parliamentarism with the investiture vote, no constructive vote of no-confidence, and no fixed interelection period.

The mean government duration in the most stable political system is 1.6 times the mean government duration in the least stable political system. The mean number of attempts in the most stable political system is almost half of the mean number of attempts in the least stable political system. Adding the investiture vote to the most stable political system

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[19] For details on the parameterization, derivation, and estimation of the likelihood function see DEM.

[20] For details on the design and execution of constitutional experiments see DEM.

results in an 8% increase in the mean number of attempts and a 4% decrease in the mean government duration. Simultaneously removing the constructive vote of no-confidence and the fixed interelection period results in a 42% increase in the mean number of attempts and a 30% decrease in the mean government duration. Removing the investiture vote from the least stable political system results in a 19% decrease in the mean number of attempts and a 25% increase in the mean government duration. Adding the constructive vote of no-confidence results in a 38% decrease in the mean number of attempts and a 16% increase in the mean government duration. Simultaneously implementing both changes results in a 43% decrease in the mean number of attempts and a 43% increase in the mean government duration.[21]

With respect to the propensity of different political systems to generate government coalitions of different types, we find that the presence of the constructive vote of no-confidence discourages minority governments from forming, while a negative form of parliamentarism facilitates their formation. Furthermore, a political system with both the investiture vote and the constructive vote of no-confidence is the most conducive to the formation of surplus governments. In general, we find that the constructive vote of no-confidence increases the average size of coalition governments, while a negative form of parliamentarism decreases it. The effects of the investiture vote and a fixed interelection period on the average size of coalition governments are instead negligible.

The second set of findings concerns the effects of dual responsibility on coalition governments in parliamentary democracies with bicameral legislatures. We find that dual responsibility has a negligible effect on government stability, while at the same time producing a sizeable impact on the composition of coalition governments. Removing dual responsibility leaves mean government duration and the mean number of attempts virtually unchanged, but significantly reduces the occurrence of surplus governments and increases the occurrence

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[21]This experiment mimics the constitutional reform implemented in Belgium in 1995, whose explicit intent was to increase the stability of Belgian governments.

of minority governments.[22]

# 7    Conclusions

We conclude this survey of our recent work on the effects of constitutions on coalition governments in parliamentary democracies by highlighting the importance of using an equilibrium framework for assessing empirically the consequences of constitutions. To do this, we focus on a prominent constitutional feature that has long played a central role in debates on constitutional reforms: bicameralism.

Previous work on the effects of bicameralism on coalition governments concluded that bicameralism decreases government duration (Tsebelis (2000)) and increases the size of government coalitions (Lijphart (1984), Sjölin (1993)).[23] The first conclusion follows from the argument that when the agreement of two chambers is required to change the *status quo* (that is, there are two "veto players"), the government is relatively more unstable.[24] The second conclusion follows from the argument that, in order to pass legislation and hence

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[22]In 1970, Sweden went from a bicameral system with dual responsibility to a unicameral system. After this constitutional reform, while average government duration changed very little (from 764 to 719 days), the fraction of minority governments more than doubled (from 42% to 86%). These observations are consistent with the predictions of our analysis.

[23]In a recent empirical study of government formation and duration in West European bicameral parliamentary democracies, Druckman and Thies (2002) find that governments that control a majority of seats in both chambers last substantially longer than those who lack majority status in one of the chambers, but they find little evidence that governments add parties that generate "oversized" coalitions in the lower chamber in order to ensure a majority in the upper chamber. Note, however, that Druckman and Thies do not estimate the effect of bicameralism on government formation and duration. Rather, they assess how majority status in the upper chamber of a bicameral parliament affects government duration.

[24]Tsebelis' (2000) argument is based on empirical evidence that second chambers can make a difference in legislative outcomes even if the party composition of the two chambers is identical (Tsebelis and Money (1997)). He argues that governments in bicameral systems are less likely to adapt quickly to exogenous shocks and are thus more likely to fall.

implement policies, government coalitions need the support of a majority in both chambers of parliament.[25]

Our analysis shows that the *prima facie* plausible belief that a bicameral system with dual responsibility leads to less stable governments may be misleading. The key oversight is that *both* the type (i.e., minority, minimum winning, or surplus) of the government coalition as well as government duration are equilibrium outcomes. At the heart of our bargaining model there is a fundamental trade-off between durability (i.e., larger coalitions are typically more durable and hence are associated with larger cakes) and control (i.e., larger coalitions imply smaller shares of the cake for each coalition member) which drives the equilibrium selection of government coalitions subject to the constitutional constraints. The terms of this trade-off depend crucially on the relative durability of the different options which, in turn, depends on the institutional environment where government formation takes place. Changes in the institutional environment induce changes in the terms of the trade-off which trigger an equilibrium response in the selection of the type of government coalitions that form and their relative stability.

When the government is responsible both to the House and the Senate, a vote of no-confidence in either chamber of parliament is sufficient to terminate the government. The equilibrium response to this institutional constraint is to form larger (surplus) coalitions (possibly constituting a majority in both chambers), to achieve the desired level of durability at the cost of a loss of control. Removing dual responsibility, while holding everything else the same, removes one source of instability and by making each coalition more durable, it

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[25]Lijphart's (1984) argument, however, only applies to cases where the two chambers are elected by different constituencies. Italy, for example would be excluded because even though both Italian chambers share all legislative and electoral powers, the representatives are elected from the same constituencies and thus, according to Lijphart, are expected to represent the same interests. Germany, on the other hand, would qualify because even though the veto-powers of Germany's upper house are limited it represents state rather than federal or district-specific constituencies.

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allows the formateur to achieve higher payoffs by forming smaller coalitions (equilibrium replacement effect). Since smaller coalitions are relatively less durable than larger coalitions, however, the replacement effect compensates the duration-enhancing effect of removing dual responsibility, thus leading to a negligible change in average government duration. The magnitude of these effects, of course, depends on the estimates of the model's parameters.

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## Table 1: Constitutional Features

|  | INVEST | NEG | CCONF | FIXEL | DUAL |
|---|---|---|---|---|---|
| **Belgium*** | 1 | 0 | 1 | 0 | 1 |
| **Denmark** | 0 | 1 | 0 | 0 | 0 |
| **Finland** | 0 | 0 | 0 | 0 | 0 |
| **Germany** | 0 | 0 | 1 | 0 | 0 |
| **Iceland** | 0 | 0 | 0 | 0 | 0 |
| **Italy** | 1 | 0 | 0 | 0 | 1 |
| **Netherlands** | 0 | 0 | 0 | 0 | 0 |
| **Norway** | 0 | 1 | 0 | 1 | 0 |
| **Sweden \*\*** | 0 | 1 | 0 | 1 | 1 |

* In 1993, Belgium amended its constitution by simultaneously abolishing the investiture vote and dual responsibility and introducing the constructive vote of no-confidence. This constitutional reform went into effect after the 1995 election.

** Prior to 1970, Sweden was a bicameral parliamentary democracy with dual responsibility. In 1970, Sweden amended its constitution by eliminating its upper chamber and becoming a unicameral parliamentary democracy.

**Table 2: Government Formation and Duration**

|  | Average Number of Attempts | Average Government Duration (Days) | Average Government Size (%) |
|---|---|---|---|
| **Belgium** | 2.4 | 495 | 62 |
| **Denmark** | 1.8 | 626 | 41 |
| **Finland** | 1.8 | 509 | 55 |
| **Germany** | 1.1 | 727 | 57 |
| **Iceland** | 1.6 | 802 | 55 |
| **Italy** | 1.8 | 321 | 51 |
| **Netherlands** | 2.6 | 810 | 62 |
| **Norway** | 1.1 | 755 | 47 |
| **Sweden** | 1.2 | 740 | 47 |
|  |  |  |  |
| **Average** | 1.7 | 603 | 53 |

**Table 3: Distribution of Government Types**

| | % Minority Governments | % Minimum Winning Governments | % Surplus Governments |
|---|---|---|---|
| **Belgium** | 12 | 70 | 18 |
| **Denmark** | 83 | 17 | 0 |
| **Finland** | 31 | 14 | 55 |
| **Germany** | 12 | 71 | 17 |
| **Iceland** | 19 | 71 | 10 |
| **Italy** | 48 | 2 | 50 |
| **Netherlands** | 15 | 40 | 45 |
| **Norway** | 64 | 36 | 0 |
| **Sweden** | 65 | 35 | 0 |
| | | | |
| **Average** | 40 | 36 | 24 |

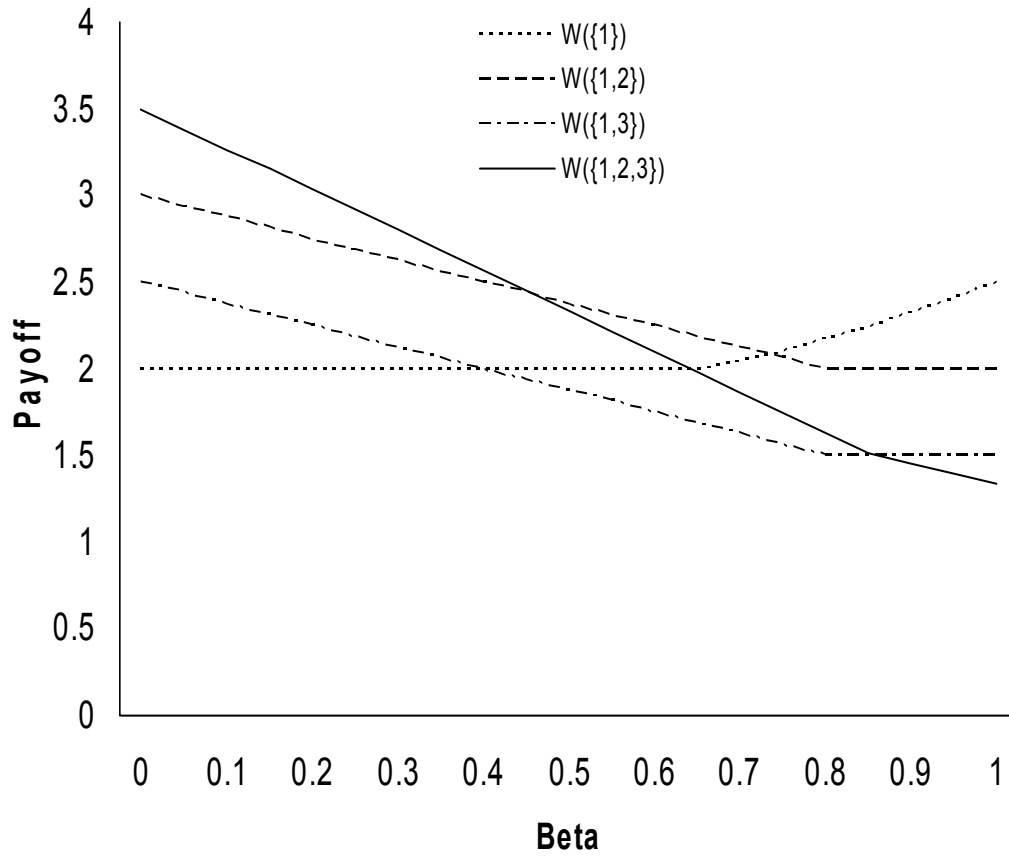**Figure 1: Formateur's Payoffs with Dual Responsibility**
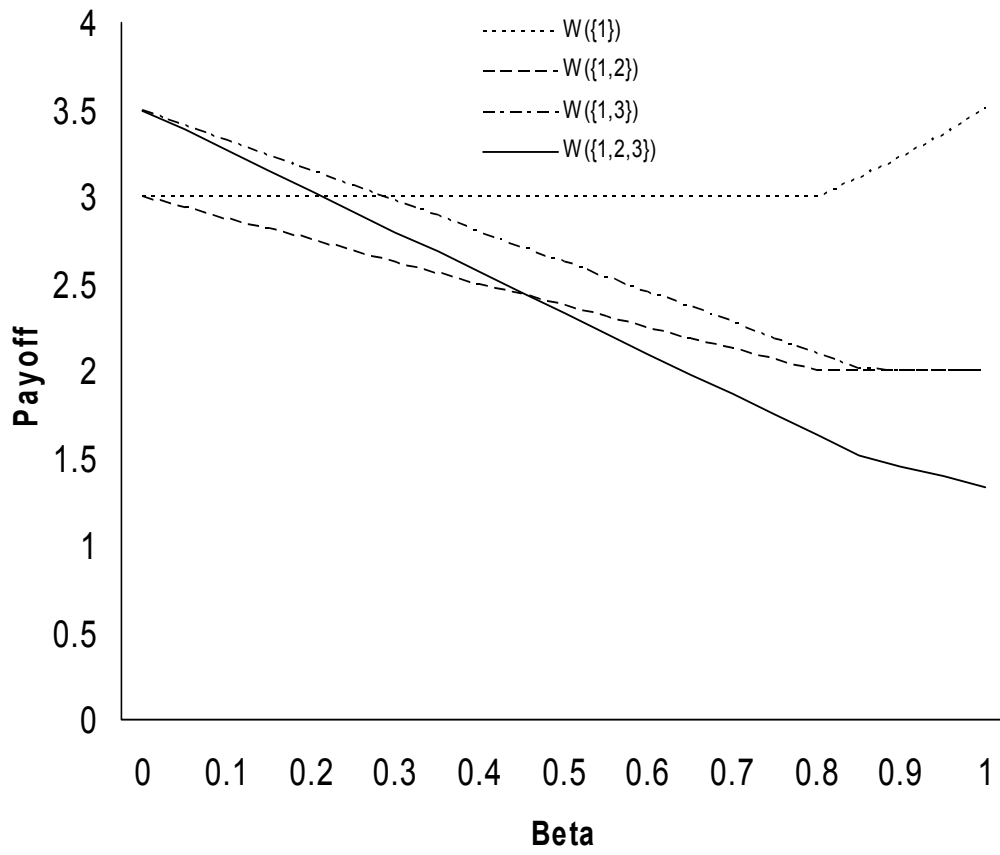
**Figure 2: Formateur's Payoffs with Single Responsibility**

**Figure 3: Average Government Duration**