Government Termination in Parliamentary Democracies – an Event History Approach with Special Attention to Party Ideology

Sebastian Jäckle (University of Heidelberg)

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Sebastian Jäckle M.A.
Institute for Political Science – University of Heidelberg
Bergheimer Str. 58, 69115 Heidelberg
tel: +49 6221542884
email: s.jaeckle@uni-heidelberg.de

1. Introduction

In comparative politics there are two main subfields dealing with governments. The first one is government formation with plenty of research mostly from some game theoretical perspective, which is normally been tested by empirical means. Examples for this kind of coalition building research are among others Laver and Shepsle (1996), De Swaan (1973) and Crombez (1996). The second one consists of studies on government termination. The research conducted in this subfield is still underrepresented in comparative political research, especially when viewed in conjunction with its logical counterpart of government formation.[1] The best evidence for this lack of research, is the fact that with Paul Warwick's "Government Survival in Parliamentary Democracies" (1994) there is until today only one monograph solely dealing with the subject of government termination. Other contributions deal with it either in a wider theoretical context of the whole government, from its formation to its end (Laver and Shepsle 1996; Mershon 2002; Warwick 2006), or not exactly with the duration of governments, but with the terms of office of political leaders (Bienen and van de Walle 1991). Besides these books a fair amount of studies exploring the determinants of premature government endings were carried out and published in several journals (Taylor and Herman 1971; Warwick 1979; Browne et al. 1986; King et al. 1990; Diermeier and Stevenson 2000; Laver 2003).

All these works – regardless which specific kind of method they used – take government duration as the dependent variable. Most authors regard this duration as an indicator of government stability and sometimes even as an indicator of stability for the whole political system. This view has been criticized by Lijphart for its generalization and over simplification (Lijphart 1984). In fact the durability may have influence on the stability of a political system, but counter-examples like the French Third or Fourth Republic, or Italy under the *Pentapartito* system, show that a political system does not have to lose its fundamental stability just because of frequent government endings. As long as there is a stable nucleus of decision makers, caring for the implementation of a consistent policy, the stability of the political system is more or less assured (Siegfried 1956; Dogan 1989). Also von Beyme regards the durability of individuals inside the government as more important than the durability of the cabinet as a whole (von Beyme 1971). This paper clearly adopts this view. The stability of a political system is regarded as a much too complex subject, as that it would be possible just to equate it with government durability, as it is done by the majority of researchers (Blondel 1968; Taylor and Herman 1971; Browne et al. 1984). The development of a comprehensive measure of political stability, incorporating all aspects that are relevant for this concept shall and cannot be accomplished in this paper. Such a measure would in addition to government duration require measures of the personal continuity of the cabinet or administration members and an inspection of policy outputs. This paper is therefore explicitly limited to the modelling of government survival and durability.

[1] One possible cause for this relative lack of research is the high data requirement for the conduction of quantitative empirical studies, as the theoretical definition and thus the operationalization of government termination and duration bears a number of pitfalls. Apart from this, there are also qualitative case studies centering on specific government terminations and more historical works describing the processes of government endings (e.g. Boston et al. 2004).

The academic work on government durability, or as Warwick puts it, "the government survival debates" (1994, p.1), can in a nutshell be divided in three phases: Until the mid-80s most studies conducted simple linear regression models to figure out relevant structural attributes that determine government survival. From then on a completely stochastic approach dominated the field, treating randomly happening critical events as the determinants of government endings, until in the late 80s both schools merged into a single event history analysis (EHA) approach. This paper links with these preceding works and investigates the relationship between a number of covariates and government duration, by estimating semi-parametric Cox-models.

Therefore the following paragraph depicts shortly the methodological development to and statistical bases of the Cox-model for government survival analysis together with an overview about the results of the studies conducted so far. Paragraph three describes the policy horizon approach (Warwick 2006) as a possibility to include party ideology in a different way than common until today. Albeit the conceptual opportunities, this spatial model definitely provides for the analysis of government terminations, the operationalization Warwick has chosen in his book, suffers from some problems. Hence an alternative is presented, combining existing data on party ideologies from expert surveys and text based studies. This ideological data completes a newly compiled dataset for the analysis of government termination, including a total of nearly 900 governments from 39 parliamentary democracies in the *old* OECD countries and Eastern Europe during the period 1945-2006. The fourth paragraph presents results of the empirical analysis using this dataset, both regarding the relevant attributes, with special attention to the policy horizons, as well as the underlying functional form of the time trend, the so called baseline hazard.

2.1. The history of EHA – from structural attributes via stochastic approaches towards the Cox-model for government survival analysis

Most quantitative studies of government termination fall in the era since the beginning of the 1970s. These studies can be divided into three consecutive phases using distinct statistical methods which nonetheless base upon the forgoing methodology – attribute approaches, mere stochastic approaches and combined approaches.

Apart from much earlier work, like the one by Lowell (1896), explicit academic studies on government survival started with research on structural attributes. An example for these kinds of studies, mostly using simple correlation and linear regression methods, gives Axelrod (1970), who identified coalitions that consist of the necessary majority and whose parties are *ideological neighbors*, or as he puts it which are "minimal connected winning coalitions", as more stable than others. Other scholars following an attribute approach were Blondel (1968), Taylor and Herman (1971), Dodd (1976), Warwick (1979) and Strøm (1985). All these studies share the basic *deterministic* assumption that government termination is solely predetermined by the structural attributes, as they existed at the time, when the government came into office (Browne et al. 1986, p.649).

Browne, Frendreis and Gleiber criticized these studies for generally having a too small explanatory power. Therefore they proposed a completely different approach centering more on the actual causes of government terminations. These causes are critical events, as for example wars, economic crisis, political scandals or conflicts within the coalition which the political actors perceive as demands. When they cannot, or are not willing to, fulfill these demands, a government is going to end. Thus in this model, government survival only depends on the occurrence of such critical events. The basic assumption made by Browne and his colleagues is that their occurrence is completely random and hence can be modeled as a stochastic process. Event history analysis (EHA) is in their view the appropriate method to tackle such research questions. It was adapted from medical research, where it is called survival analysis (Ziegler et al. 2004). But since the 1980s it has been applied to more and more studies in the social sciences as well, especially in sociology, since a growing community of scholars realized that a large number of research questions can only be answered adequately when time itself is taken into account as a relevant factor (Blossfeld et al. 1986; Kertzer 1994). Some of these social science studies keep the literal meaning of survival[2], for others an event is, in more general terms, a transition from one state to another and can thus also model much more pleasant events than death[3]. Browne and his colleagues have been the first to use EHA in political science for the analysis of government endings.

The mathematical bases for every EHA are two functions:

(1) the **probability density function** $f(t)$ giving the immediate and unconditional probability that an event will occur, or in other terms, a unit will fail, within the infinitesimal short interval bounded by t and $t + \Delta t$:

$$f(t) = \lim_{\Delta t \to 0} \frac{\Pr\,(t \leq T \leq t + \Delta t)}{\Delta t}, \qquad [1.1]$$

with T being a continuous, non-negative random variable indicating the time span, after which the event has occurred and t being a concrete realization of this variable.

(2) the **survival function** $S(t)$ giving the probability that an event has not occurred until some point in time. Thus the unit of analysis has survived till t. The function writes as folows:

$$S(t) = 1 - F(t) = 1 - \Pr(T \leq t) = \Pr(T \geq t) = \int_t^{\infty} f(u)d(u), \qquad [1.2]$$

showing that it is a monotonic decreasing function of t, having its maximum of 1.0 at $t = 0$ and taking its minimum of zero for $t \to \infty$. An example from a medical survival study makes this coherency plausible: at the beginning of the observation all subjects are still alive, with ongoing time –

[2] One example gives Derosas with his examination of different infant mortality rates between Jews and Catholics in 19th century Venice (Derosas 2003).

[3] An example for this definitely is a study on marriage and fertility dynamics in Uzbekistan, where the marriage or more exactly the transition from the state of being unwedded to being married, counts as the event of interest (Agadjanian and Makarova 2003).

accumulatively viewed – more and more patients exit the observation, either because they die or they drop out of the sample for different reasons, until the probability to survive within the observed sample would become zero when the study continues ad infinitum.

The combination of these two functions can be regarded as the conceptual core of EHA. It is generally known as the **hazard rate λ** (Lawless 1982, p.8), dividing the number of dropped out units at time t by the quantity of units being alive just shortly before t and thus still being at risk of failing. In other words the hazard rate represents the instantaneous risk that an event will occur within the extremely short interval Δt, under the condition that it has not occurred until time t. The hazard rate can therefore be written as

$$\lambda(t) = f(t)/S(t) = \lim_{\Delta t \to 0} \frac{\Pr\,(t \leq T < t + \Delta t | T \geq t)}{\Delta t}\,. \qquad [1.3]$$

Browne, Frendreis and Gleiber, as well as Cioffi-Revilla (1984), expect the critical events to occur completely random resulting in a Poisson-distribution of the government durations.[4] This negative exponential distribution theoretically comes along with a constant hazard rate. The empirical analysis nonetheless has shown that such a completely stochastic approach, modeling government durations solely via a probability distribution of critical events, cannot explain sufficiently the duration variances in most countries (Browne et al. 1986, p.640-644). Therefore the group around Browne admits that further covariates must be taken into account when they declare: „the immediate theoretical task is to construct a working model of governmental life-cycle which incorporates the findings of both the structural attributes and random events models“ (Frendreis et al. 1986, p.626).

The first attempt of bringing these two approaches together which up to that date stood in clear opposition to each other[5], was made by King, Alt, Burns and Laver (1990). Their Unified Statistical Model, according to the four scholars also called **KABL-model**, builds on a hazard rate conditional on government attributes:

$$\lambda_i = e^{-(\beta' x_i)} = \exp(-\beta_0) exp(\beta' x_i), \qquad [1.4]$$

with x being a vector of explaining covariates, β being a vector of related coefficients and i being the observation number. So the hazard rate can vary, but the underlying baseline hazard β_0, which indicates the hazard in the absence of any attribute influence, is still regarded as constant. This specification of the model makes the baseline hazard a sole function of the attributes and therefore independent of time. Using MLE the β-coefficients and thus the influence of attributes can be estimated out of the resulting likelihood function.[6]

[4] King gives the mathematical proof that event counts, like government durations, are Poisson-distributed (King 1988, p.660).
[5] A short, but very instructive, insight into the intense debate between advocates of the structural attributes approach on the one hand and event theorists on the other hand provides the article by Strøm et al. (1988).
[6] For practical reasons it is not the likelihood itself that is maximized, but the log-likelihood, making no difference in the resulting estimates and standard errors (Tutz 2000, p.74; Warwick 1994, p.20).

One further aspect of the model is worth mentioning: it is the so called censoring. From the methodological point of view censored observations enter the model not with their empirically observed duration, but with a somewhat longer duration, estimated by the survival function $S(t)$. King and his colleagues censor – based on theoretical reasons – all governments that end at maximum one year before the end of the constitutional interelection period (CIEP). They justify this approach with the assumption that the incentive for coalition partners to exit a coalition, and thereby terminating the government, increases with the end of the CIEP approaching. According to this view, governments ending during this phase would have continued beyond their actual termination day, when the end of the CIEP had not been so near. Although it is not possible to exactly predict how long these censored governments would have survived, the survival function gives the probability that a censored government would have had a duration at least as long as observed, or even longer. With a dummy variable δ_i distinguishing between censored and non-censored observations the log-likelihood function of the KABL-model can be expressed as (King et al. 1990, p.854f):

$$lnL(\beta|t) = \sum_{i=1}^{n} \delta_i[-\beta' x_i - t_i \exp(-\beta' x_i)] + \sum_{i=1}^{n} (1-\delta_i)[(-\beta' x_i)t_i]. \qquad [1.5]$$

Although King and his colleagues gained better estimation results maximizing this function compared to the pure stochastic approach, the KABL-model will nevertheless not be used in this study. This is due to two problematic assumptions within the model: First the use of a certain specified baseline hazard – in the KABL-model it is a constant one – makes the model inflexible and when this parameterization is not appropriate, the estimation results would be heavily biased.[7] The second assumption, the decision for strategic censoring, poses some further problems. Therefore in this study on the one hand a model is used that does build on a certain time dependence, but does not require to posit a specific functional form of the baseline hazard rate and on the other hand the question which observations have to be censored is taken more seriously. A model, introduced by David Cox, meets these requirements.

The **Cox-model** enables researchers to estimate the influence of attributes on the hazard rate, without knowing the functional form of the baseline hazard and thus without the danger of introducing error into the model through a misspecification of this underlying hazard (Yamaguchi 1991, p.101f). The basis of the model is again the hazard rate for the i-th unit:

[7] There is a number of additional fully parametric models (e.g. Weibull, Gompertz, Log-Logistic) which all try to model the time-dependence in event-history-data directly through setting up a function describing the dependency between elapsed time and the survival period. A correct specification of this baseline hazard is indispensible for a meaningful estimation. With regard to the two possible causes of time-dependency, real dependence of time and "unreal" time-dependence because of unobserved heterogeneity (Blossfeld et al. 2007, p.184; Vermunt 1997, p.189), it becomes clear that especially adopting the second view, it is impossible to determine the baseline function a priori on theoretical grounds. An inspection of the empirical hazard-rates via the life-table-method can also at best give some hints about the functional form of the baseline hazard, but cannot be used for an exact definition. Therefore the functional specification of the baseline hazard constitutes the most serious drawback for the use of fully parametric models like the KABL-model (Box-Steffensmeier and Jones 2004, p.85-87).

$$\lambda_i(t) = \lambda_0(t)\exp(\beta_1 x_{1i} + \beta_2 x_{2i} + \ldots + \beta_{ki}) = \lambda_0(t)\exp(\beta' x), \qquad [1.6]$$

with $\lambda_0(t)$ being the baseline hazard function and the term $\beta' x$ containing the covariates and regression parameters (Box-Steffensmeier and Jones 2004, p.48). Compared to the exponential model in (1.4) it is obvious that this formula lacks the constant β_0 because it is absorbed through the not further specified baseline hazard $\lambda_0(t)$. The Cox-model belongs with the proportional hazard family, meaning that according to (1.6) hazard rates are multiplicatively linked and thus the quotient from the hazard rates of any two units i and j are no longer dependent on the baseline hazard, but on the k relevant covariates (Garczorz 2004, p.98-99). The Cox-model requires this quotient called *hazard ratio* to be constant over time (Hosmer and Lemeshow 2008, p.70). Formula 1.7 shows this:

$$\frac{\lambda_i(t)}{\lambda_j(t)} = \exp\left[\beta_1(x_{i1} - x_{j1}) + \ldots + \beta_k(x_{ik} - x_{jk})\right] = \exp\left[\beta'(x_i - x_j)\right]. \qquad [1.7]$$

In other words the Cox-model implicitly supposes that the covariates can only cause proportional changes of the hazard rate, but cannot alter its basic functional form. This assumption, when unjustified, would result in biased estimates. Therefore it is necessary to test the model globally as well as every single covariate for proportional hazards (Blossfeld et al. 2007, p.223). These tests are carried out during the analysis in paragraph 4.

For the estimation of the β-coefficients in (1.6) Cox introduced the partial likelihood method which differs from the MLE insofar, as it uses only part of the information contained in the event history data (Cox 1975). It is not the exact survival times that are used for the estimation but the ascending order of these durations. Hence the Cox-model assumes the absolute differences between the survival times not to contain any further information regarding the dependency between covariates and hazard rate.[8] The first step in estimating the Cox-model is thus to complile an ascending sequence of all cases according to their durations (Warwick 1994, p.23f). After this, it has to be asked: what is the probability of one specific case (say j) to terminate exactly with the survival time T_i? This probability can be expressed as follows (Box-Steffensmeier and Jones 2004, p.51):

$$\Pr\left(t_j = T_i \middle| R(t_i)\right) = \frac{\exp(\beta' x_i)}{\sum_{j \in R(t_i)} \exp(\beta' x_j)}. \qquad [1.8]$$

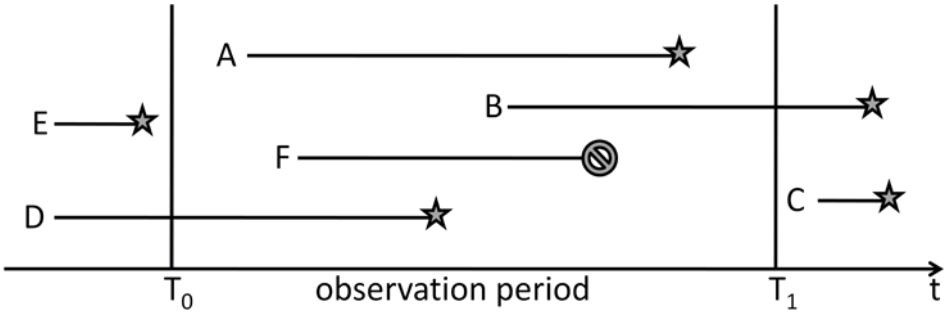
The term $R(t_i)$ indicates the risk set of cases that are still alive at time t_i and hence at risk of failing. It constitutes the condition for the probability function. For the understanding of this formula it is of further importance to recognize that x_i is the covariate value, for that unit terminating at time t_i, whereas x_j is the x-value for the j-th unit of analysis (Cox 1975, p.272). For the estimation of the betas the product of these conditional probabilities over all observations is build, denoted by Cox as the partial likelihood:

[8] For most studies this loss of information, compared to fully parameterized models, does not pose a relevant problem, as the differences between the exact survival times and the ordering of these durations vanish with growing sample size.

$$L_p = \prod_{i=1}^{K} \left[\frac{\exp(\beta' x_i)}{\sum_{j \in R(t_i)} \exp(\beta' x_j)} \right]^{\delta_i}. \qquad [1.9]$$

Again for practicability reasons the estimates are gained through maximizing the log of this likelihood and again δ_i distinguishes between censored and non-censored observations. In contrast to the KABL-model no strategic censoring is applied, so that observations are only censored when it is really necessary. Figure 1 illustrates the different possibilities:

Figure 1: Different kinds of censoring



The illustration shows the six observations A, B, C, D, E and F. The star at the right end of the lines that indicate the risk periods represents an event of interest, whereas the crossed out circle stands for an event that is not the one of interest. Author's diagram adapted from Yamaguchi (1991, p.4).

Observation ***A*** is the case researchers wish to have. The beginning, as well as the transition point, lies within the observation period, so that the whole information about the transition process can enter the model. In contrast the observations of ***B*** and ***D*** only contain partial information. ***B*** is called right censoring, as only the starting point of the transition process is known, but the event occurs after the end of the observation period at T_1. Correspondingly an observation like ***D*** is called left censored, when the event of interest is observed for a unit whose event history begins before T_0. Even though the partial information resulting from censoring confronts the modeling of event history data with big difficulties, EHA is nonetheless better suited to handle such a problematic data structure than classical statistical instruments like regression analysis. In the present study however, it is only the right censoring that is relevant, because the starting points of the observation periods are different from country to country and always coincide with a government formation, so that there is no observation like ***D***. On the other hand there are at the end of the observation period – which is the same day throughout the whole sample – in every country governments still in power. This is the classical case of right censoring as shown by case ***B*** in the figure. That leads to observation ***F*** which from the statistical point of view is treated in exactly the same way as a classical right censored observation (***B***), although it terminates within the observation period like ***A***. The reason for this treatment is based on a different kind of terminating event. Observation ***F*** does not end because of the event of interest, but because of some other event. Therefore it would have continued for a longer time, if this other event had not happened. That is why it is censored. Again the example of a medical study helps to clarify

this: when a patient dies because of a car accident which is not connected to the event of interest (say cancer), it makes sense not to use the observed survival time, but an estimated longer duration. The same holds true for governments, ending because of parliamentary elections and clearly non-political terminations like the death of the head of government. Beside these two possibilities and the classical right censored cases no observations are censored in this study. This is a clear renunciation of the practice of strategic censoring which always introduces some arbitrariness into the model and as Diermeier and Stevenson rightly noticed also excludes exactly those observations that are most interesting for the analysis (Diermeier and Stevenson 2000, p.635f).

2.2. Summary of the results of former studies on government termination

The studies conducted so far came to only partly similar results. Probably because of the different specific theoretical models and operationalization of the dependent and the independent variables the overlap of the results is (unsurprisingly) far from perfect. Table 1 gives an overview of the attributes that were found to have significant effects on government survival in the respective studies.[9] This study includes most of these potentially relevant attributes (plus some additional ones) and thereby tries to reexamine the results of the former studies.

Table 1: Attributes that have shown significant effects on government survival in former studies

	Number of gov. parties / type of gov.	Fractionalization of the parliament	Ideological diversity between all parl., the governing or opp. parties	Polarization within the parliament	Formal investiture requirement	Economic characteristics of the system
Lowell (1896)	+ (SPG)	/	/	/	/	/
Riker (1965) / Axelrod (1970)	+ (MWC/MCWC)	/	/	/	/	/
Taylor and Herman (1971)	+ (SPG/MWC)	+	-	+	/	/
Warwick (1979)	+ (MWC)	+	+ (gov.)	/	/	/
Robertson (1984)	-	-	-	-	/	+
Strøm (1985)	+ (majority)	-	/	-	-	/
King et al. (1990)	+ (majority)	+	+ (opp.)	+	+	/
Warwick (1994)	+	+	+	+	+	+

A "+" indicates significant influence on government duration, a "-" indicates no influence and a "/" stands for not tested.

Apart from the attributes, time dependence has been the second important aspect of the studies so far. Its functional form, represented by the baseline hazard rate, is subject of a still ongoing debate within the community. The perception of King and his colleagues in regarding the baseline hazard to be constant over time, has to be seen especially in the nuanced light of their strategic censoring of all

[9] Though the list of studies is not exhaustive, all relevant trends in the literature are represented.

governments ending within a time span of 12 months before the end of the CIEP (King et al. 1990). Even though especially in this phase a considerable deviation from the constant baseline can be expected theoretically, which King et al. even take as the reason for the use of strategic censoring, the KABL-model does not try to figure out the slope of this curve. Others scholars however made assumptions on its functional form.

Based on the findings of Downs (1957) and Mueller (1970), Warwick and Easton held the view that the baseline hazard must be rising, which means that the instantaneous probability of terminating increases as time goes by (Warwick and Easton 1992, p.141-143).[10] The contrary position was taken by Bienen and van de Walle (1991, 1992) who identified a decreasing hazard in their study on the durability of political leaders. This result can be explained through an interaction of the different object of investigation (leadership duration vs. government duration) and a much bigger sample of countries studied. The decreasing hazard is therefore first of all attributable to authoritarian and totalitarian systems, where the probability to fail is extremely small for a dictator, having been in office already for some years. Therefore it is no surprise that Alt and King (1994, p.202-208) were not able to find the same decreasing hazard in a subset of Bienen and van de Walle's sample, consisting only of the parliamentary democracies in Europe after World War II. Thus most studies in recent times adopt the view of a somehow rising hazard, although the concrete functional form is still unclear. A good explanation for the difficult empirical verification of the rising baseline hazard rate, which furthermore enlightens the understanding of the problem, comes from Diermeier and Stevenson (1999, 2000). They argue that governments ending in dissolutions of the assembly (with early elections) and those, ending with a replacement of the previous government without elections, should be treated differently. Based on a game theoretical model by Lupia and Strøm (1995) they expect only the hazard rate for dissolutions to be rising, the replacement hazard however runs more or less flat, which results in a pooled baseline hazard rate that is not as clearly rising as the dissolution hazard alone. This prohibits an easy detection of an increasing hazard, when only the pooled rate is analyzed.

The high nescience about the form of the baseline hazard is reason enough to address this question briefly in the end of this paper. Before this underlying hazard rate can be estimated, however the influences of the attributes have to be analyzed. The next section of the paper therefore deals with the different attributes that show influence on the survival rates and especially promotes a new way for integrating party ideology as a causal variable.

[10] This assumption can be explained through the concept of a "coalition of minorities", which gains more and more power with proceeding time. Although this term was introduced by Mueller in respect with the American presidency, the basis of this concept can be found in Downs's theory. According to him a government, even if it always has a (not always identical) majority behind its decisions, always puts more and more citizens/representatives off with time going by. In the end this coalition of disaffected minorities results in a oppositional majority, which can also bring down a government (Mueller 1970, p.20; Downs 1957, p.55-60).

3.1. The policy horizon approach as a ways to include party ideology

Analogous to its logical counterpart of government formation, in the early government termination studies office seeking assumptions clearly dominated, resulting in a negligence of ideological explaining variables. With the emergence of policy seeking theories for coalition building, there also came the necessity to operationalize these new ideological variables. Most studies used some kind of spatial model of party ideology, with the distance between the ideal point of a coalition member and the pooled position of the whole government, as a factor relevant for coalition formation. From this point on it was only a small step to the use of similar measures for the analysis of government survival (Taylor and Herman 1971; Warwick 1979). Compared to the availability of conceptually very sophisticated spatial models, the measuring of party ideology and correspondingly the operationalizations, used in all these studies for the empirical verification, were kept extremely simple. Taylor and Herman arranged the political parties on an ordinal left-right scale (1971, p.33), King and his colleagues used a single left-right continuum for a measure of opposition concentration on the left or right of the government (1990, p.858) and Warwick, although he tested four dimensions (left-right, clerical-secular, regime support and materialist-postmaterialist), combined in his final analysis the first three that had shown significant effects before, linearly, again into a single ideological diversity value. This variable shows, apart from the control variables, the most significant influence in his study (1994, p.54-74). There are two main problems with these approaches: (1) the assumption of a single dimension describing the differences between political parties does not account for the multidimensional nature of politics; (2) even if more dimensions are tested, they are all regarded as having the same relevance for all parties in all countries during the whole observation period, which is probably a too strong assumption.

In "Policy Horizons and Parliamentary Government" (2006) Warwick follows a different path. He argues that theories, which take the policy distance between a coalition party and the ideal point of the whole government as explanations for the behavior of the political actors within the coalition, are not sufficient, because they all suffer from the problems of the chaos theorem, which always arise when more than one dimension is taken into account.[11] According to this assumption it is extremely likely that at least one of the parties within a governing coalition (or proto-coalition[12]) is able to find an alternative coalition where it sees its own ideological preferences better realizable. This constellation theoretically implies very instable governments leading to the question why the empirical record is by far not as bad as this theory would expect it to be. Because classical policy seeking theory underperforms in this respect, Warwick modifies it in one relevant aspect.

[11] Studies have shown, that even when the strict conditions of the Arrow theorem are relaxed, in a multidimensional space the transitive positions of political actors do not result in transitive outcomes. Yet the intransitivities even extend to the whole space of alternatives (Arrow 1963; McKelvey 1979, 1976; Kern and Nida-Rümelin 1994, p.32-39).

[12] In contrast to a definition which only includes parties that "agree to talk to each other about forming a government" (Diermeier et al. 2002, p.898) this study adopts a wide understanding of the term proto-coalition. It encompasses every coalition that can be formed out of the parliamentary parties regardless of possible ideological differences and the question of majority or minority governments.

He introduces an outer boundary of compromise that surrounds the ideological ideal point. This concept is based on the assumption that, when it comes to coalition formation, parties and their leaders depend on the party base and the supporters in the electorate. So the tradeoff between policies and office is not unlimited, as the policy seeking theory implies, but there exists a point, beyond which, the party base and supporters "prefer their party to stay out of government – even if it means that the government that is formed will implement policies that are even more remote from the party's (and their) ideals" (Warwick 2006, p.6). Figures 1a and 1b in the annex illustrate this theory within a two dimensional policy space. None of the three parties A, B and C has a parliamentary majority on its own, but all two-party-combinations are winning. The ideal points of these parties stay the same in figure a and b. Using policy distance as an explanation, coalition [AB] would probably be expected to be formed (and to last longer), but because of the intransitivities generated through the chaos theorem, every point in space can also be defeated again. The policy horizon approach reduces the number of possible outcome points. Assuming the two dimensions to be equally relevant for the parties, the horizons can be drawn as circles around the ideal points. Only points lying within these boundaries are acceptable for the party base and the party's supporters, which limits potential coalitions to parties whose horizons intersect. The size of the intersection area can be seen as a proxy for the probability of government formation as well as for the duration of coalition governments. Therefore figure 1a shows a situation where there are two proto-coalitions ([AB] and [BC]) that are equally likely, as their policy horizon intersections are approximately about the same size. In figure 1b party A is not willing to deviate to the same extent from its ideal point as before and thus the area of compromise is much smaller for [AB] than for [CB], which makes the latter more likely to form and more durable according to Warwick (2006, p.8-11).

The model comes closer to reality when some of the restrictive basic assumptions from figure 1 are relaxed, giving the policy horizons more and more irregular shapes:

(1) the parties can attribute different salience values to the ideological dimensions, resulting in ellipses (cp. Annex fig. 2a);
(2) the party can also differentiate within one dimension to which side of the ideal point it tolerates deviations more or less, resulting in policy horizons as in figure 2b;
(3) and Warwick uses not only one or two, but three dimensions, which lets the policy horizons assume three-dimensional "egg-shapes" (cp. Annex fig. 3a and 3b).[13]

[13] The restriction to three dimensions can be justified through the results of a number of studies that identified at maximum three relevant ideological dimensions within different parliamentary systems (Budge et al. 1987; Laver and Shepsle 1996; Müller and Strom 2000) and also on practical grounds, because a higher number of dimensions would on the one hand impede the simple graphical illustration and on the other hand considerably complicate the calculation of the intersection sizes. Therefore the *Horizons 3D* program developed by Warwick, which generates the wireframe models, as well as the calculation outputs relevant for the further analysis, is restricted to three dimensions. The program is available for free at http://www.sfu.ca/~warwick/program/.

3.2. Warwick's operationalization of the policy horizon approach and his results regarding government termination

The policy horizon model requires information about the ideal points of the parties and about their maximum willingness to compromise. Warwick uses two different approaches to get these data:

(1) a behavior-based method, where the ideological positions derive from the Comparative Manifesto Project (CMP)[14] and the policy horizons are estimated based on the distances between the ideal points of coalition members and the whole government[15] throughout the entire observation period (2006, p.41-49).

(2) an expert survey asking the respondents to give their estimate of the parties' ideological position on three dimensions as well as the maximum deviations, the parties' supporters would tolerate from this ideal point in both directions.

Both approaches have some advantages, but also exhibit several deficiencies. The behavior based approach is clearly very simple because it does not require more information than the parties' ideological positions for the ex post estimation of their limits of compromise. On the other hand the policy horizons of parties that did not participate in a big enough number of governments cannot be properly specified and the method generates only a single policy horizon for each party that is fixed for all dimensions and throughout time. This of course takes away the basic advantage of the horizons approach to be time- as well as dimension-sensitive.

The expert survey however provides for a possibility to operationalize the model with more flexibility. The identification of the parties' ideological positions follows the pattern of Laver and Hunts (1992) seminal work which is widely accepted. Bigger problems arise regarding the ways the salience values for the dimensions and the limits of compromise are generated. For the salience scores the experts had to rate the other dimensions in relation to the left-right-dimension. Such a benchmarking is problematic insofar as the left-right-dimension in some countries is only of subordinate relevance and furthermore it has been shown that completely different things are understood under the term "left-right" in different countries (Benoit and Laver 2007b). This demonstrates the limited usefulness of this dimension as a reference value. Apart from this theoretical deficiency not all experts actually made use of the possibility to assign "party-specific salience scores" (Warwick 2006, p.77), which could partly be due to the unclear unit of analysis: is it the salience of the parties' supporters, of the parties' bases or as in the Laver and Hunt study "the importance attached by the leaders of each party to each policy dimension" (1992, p.124).

Regarding the policy horizons, the experts had to assess the distance, a party would at maximum deviate from its ideal point. In comparison with the identification of the ideological positions and

[14] In accordance with many other studies Warwick uses principal components analysis to get on a purely inductive way the two most relevant dimensions, which he labels "left-right" and "new politics", and by using the factor scores he arrives at the parties' ideal points (2006, p.55-56).

[15] The ideal point of the whole government is calculated as the mean of the separate coalition parties weighted on their seat share in parliament.

salience scores, this seems to be a complicated task. The smaller number of responding experts and the greater variance in the scores, compared with the ideological positioning, support this view. The theoretically anticipated negative relationship between salience and policy horizons also does not appear, when the expert values are used (Warwick 2006, p.81-83). In contrast to this empirical finding Warwick later in his study states exactly the opposite: "Recall that the wider a party's horizon is on a dimension, the lower the salience of that dimension to it" (2006, p.94). For a number of Christian Democratic and Agrarian/Centre parties he furthermore finds that his expert survey generates much too small policy horizons when compared with the salience values of his own study and of the Laver/Hunt study (2006, p.101). So Warwick himself regards the salience values as the better, because more valid, pieces of information for these parties. Yet it is completely unclear, why this finding should not hold for the other parties as well. A much simpler explanation for the poor results of the comparison between policy horizons and salience values is that the latter are a concept much more present in the heads of the experts, making the estimates more valid. The policy horizons as a completely new concept are on the other hand much more difficult to grasp, probably overstraining most respondents. Therefore this study follows another path calculating the policy horizons out of the salience scores.

On the grounds of his operationalizations Warwick comes to the result that the intersection sizes of the coalition members' policy horizons reflect the government's survival probability (2006, p.145). This can be explained in accordance with EHA in the following way: when a critical event requires a change in the government's policy which positions it outside the horizon intersection, a termination of the coalition is relatively likely. And ceteris paribus the smaller the intersection size, the more often a government should find itself in such a situation.

3.3. A new approach to operationalize policy horizons

The operationalization of the horizon approach used in this study is based on the theoretically well grounded assumption that the more relevant an ideological dimension is for a party, the less deviation from its ideal point it will tolerate. Thus a negative relationship exists between the salience score and the policy horizons which enables us to calculate limits of compromise for every party and dimension only with the knowledge of the ideal points and salience scores.

The calculation of the policy horizons involves four steps:

(1) the identification of the three most important dimensions within a country per legislative period,
(2) the identification of the parties' positions on these three dimensions,
(3) the identification of the parties' salience values for these three dimensions and
(4) the calculation of the policy horizons out of these salience scores via an appropriate mathematical transformation.

(1) For the detection of the three most important dimensions a combined expert survey and manifesto based approach was chosen.[16] The studies by Laver and Hunt (1992) and Benoit and Laver (2006) are taken as a basis. The three most important dimensions in a country, obtained through the individual parties' salience scores, weighted on their parliamentary strength, are taken from both studies. Some of these dimensions show up several times (e.g. "taxes vs. spending") indicating a high relevance throughout different systems, others are clearly country specific (e.g. "Quebec" in Canada). A total of 25 dimensions with increased relevance in the observed countries can be detected. They are listed in table 1 in the annex together with the exact questions from the two studies. To obtain time-varying salience values, the two expert surveys are nevertheless not sufficient. Therefore it was tried to replicate the 25 dimensions using CMP-categories. This task was successful, although not every expert based dimension could be replicated by manifesto data. Table 1 (annex) illustrates this procedure: The first twelve dimensions were reproduced more or less one-to-one by the CMP-data, the following five were combined into a single Europe-dimension, the next five were absorbed by one of the foregoing dimensions and only for the last three dimensions no pendent could be found in the manifesto data. For the resulting 13 dimensions[17] the party specific salience values can easily be calculated as the sum of the positively and the negatively coded percentages of the quasi sentences (cp. Annex table 2). For the country wide salience scores the mean of these values weighted on the vote share is used and the three highest values for each legislature enter the *Horizons 3D* Program as the x-, y- and z-axes.

(2) The ideological positions on the three most salient dimensions are calculated as a ratio-scale[18], subtracting the negatively from the positively coded category scores and dividing this value by the total number of positive and negative scores. The resulting scores range from -1 (all quasi-sentences that are relevant for a dimension are negatively coded) to +1 vice versa.

(3) The single parties' salience values had already been determined when the country wide salience was calculated. For the inclusion into the *Horizon 3D* Program they are divided by the mean average of all salience scores for the x-, y- and z-dimension respectively and thus standardized. A score of 1.0 indicates that the party attributes the average salience to the dimension; whereas a score of 0.5 (2.0)

[16] The author explicitly regards both methods to generate meaningful information which militates in favor of a combined approach. When expert surveys can generally be seen as being more valid, the text based methods are on the contrary superior as they can plot ideological changes through time. A more profound discussion of the diverse possibilities to measure ideological positions of parties shall not be accomplished here. For a good overview of the intense debate about this topic see the special issue of *Electoral Studies* from 2007 (26:1): Comparing Measures of Party Positioning: Expert, Manifesto, and Survey Data and especially the articles by Andrea Volkens, Ian Budge and Paul Pennings, Leonard Ray, Hans Keman as well as Kenneth Benoit and Michael Laver in that volume.

[17] These are social liberalism, privatization vs. state ownership, productivity vs. environmental protection, decentralization vs. centralization, urban vs. rural, welfare vs. taxes, foreign policy, EU, deregulation, free trade vs. protectionism, internationalism vs. nationalism, regionalism/secessionism and military.

[18] In contrast to a simple additive scale, like the one used by Corruba (2001), a ratio scale, as first proposed by Kim and Fording (1998), controls for the dimension salience. This method has shown a wide acceptance among scholars (cp. Wessels 1995, p.152-155; Ray 1999; 2007, p.16; Benoit and Laver 2007b, p.96).

shows that the party perceives the dimension to be half (double) as relevant as the average of all parties.[19]

(4) These party specific salience scores are the basis for the calculation of the parties' limits of compromise – their policy horizons. When the salience score is zero (in the unstandardized version), the bound of compromise takes its maximum of 2.0. This is due to the range of possible ideological positions going from -1 to +1.[20] On the other hand the policy horizons must take their minimum, when salience is at maximum. Because the theoretically possible maximum salience score of 100 is virtually not present in the data[21], scores around 50 and above generate already minimal horizons. Yet this minimum is not set to zero, but to approximately 0.1, because it is assumed that every party in a parliament always strives for government membership and therefore is willing to deviate, at least to some extent, from its ideal point. Function (3.1) transforms the salience scores for party i in the year j for dimension k into the respective limits of compromise (LC), ranging from circa 0.1 to 2.0:[22]

$$LC_{ijk} = \left((2.0 - 0.1) \cdot \left(\frac{1}{2}^{sal_{ijk}/10} \right) \right) + 0.1. \qquad [3.1]$$

With the LC-scores the policy horizons and their intersections can be calculated. Summed up, this approach generates a continuous timeline of varying policy horizons for every party which makes it clearly superior to the snapshot, the expert survey produces. But there is a tradeoff in terms of flexibility: in contrast to the expert survey this method cannot incorporate diverse limits of compromise to the left and right of the ideal point. The shapes of the policy horizons are therefore ellipsoid and not completely irregularly "egg shaped" as with the expert survey, but also not pure circles or spheres as with the behavior based approach that ignores all differences in between the dimension saliences. The *Horizon 3D* program calculates whether these horizons intersect, how big this intersection size is and whether the weighted mean of the ideological positions falls within the intersection area. Furthermore, simulations take into account the inaccuracy of ideal points, salience values and limits of compromise arising from the different lengths of the manifestos.[23]

[19] This standardization is due to the *Horizon 3D* program. Salience scores that are originally zero are therefore also replaced by a score of 0.001.

[20] Although it could be argued that the maximum limits of compromise in a two- or three-dimensional space should be even greater at 2.83 (diagonal in a square with side length 2.0) or 3.46 respectively (diagonal in a cube with edge length 2.0), a meaningful interpretation of such a high score would no more be possible within one dimension. Additionally empirical tests have also shown that the policy horizons would become too big, generating intersections between parties that definitely cannot be considered as potential coalition partners. Thus face validity also argues for an upper limit of 2.0 for the maximum willingness to compromise.

[21] In 1951 the Australian Country Party serves as a case, where all the quasi-sentences, contained in the party manifesto, were coded into one category (per703: *farmers positive*) giving the urban/rural-dimension 100 percent salience.

[22] This formula for sure is not the only possible transformation method. It was primarily chosen on the grounds of good face validity of the estimated policy horizons. A linear transformation was also tested, but rejected because of generally too big resulting horizons.

[23] The basic assumption with these simulations is that from a longer manifesto the ideal points as well as salience scores can be determined with higher precision than from a shorter one. Thus distinct standard errors per legislature, party and dimension can be calculated for the ideal points, salience scores and limits of compromise. These are used for simulations in the *Horizons 3D* program.

4. The analysis

This paragraph depicts the results of the Cox-model. The dataset that is used for this task includes a total of 886 governments in 39 parliamentary democracies from the OECD countries as well as Central and Eastern Europe. The observation period starts for every country with the first government, following the first democratic parliamentary election after World War II and it ends for all countries except Serbia-Montenegro on October 31st 2006.[24] Table 3 in the annex gives a first impression of the dataset with respect to the dependent variable and reveals a considerable variance within the mean durations.

The first model investigates these country specific differences additionally through time. Therefore, for all governments, dummy variables classifying the country and the decade, when the government ended, were constructed. As reference category the country with the median of the average durations (Belgium) and the time span between 1950 and 1960 was chosen. The results in model 1 have to be read as the extent to which the hazard differs from the case when all dummies are zero – which is Belgium in the 1950s. The antilog of the β-coefficients, the so called hazard ratio, has been chosen to be presented, because it can be interpreted easier than the raw coefficients. Ratios greater than one indicate that a one unit increase in the covariate value leads to an increase in the hazard according to the ratio's value. Vice versa a decrease in the hazard stems from ratios less than one. Ratios equal to one indicate that changing the covariate's value does not affect the hazard rate (Box-Steffensmeier and Jones 1997, p.1450). Thus in the years directly after World War II the hazard for the other countries was more than 50 percent higher than during the following decade in Belgium. Overall a quite clear trend towards more durable governments can be observed. Especially the cabinets that ended since 2000 follow this pattern, but even the 1990s, when the new, and at that point of time not yet consolidated, Eastern European democracies enter the dataset, contain considerably longer governments than the reference category. With respect to the country specific hazard rates, the results are as well plausible: Apart from Italy, France, Japan, and Greece which are classically well known for short governments some of the Eastern European countries and here especially Albania, the Baltic states, and Romania have very high hazards. For example the hazard rate for Lithuania is more than three times higher than the one of Belgium in the 1950s. On the opposite side of the continuum we find some of the Scandinavian and the Westminster countries as well as Luxembourg, the Netherlands, Germany and Austria with considerably more durable governments.

Model 2 presents the results regarding *policy blind* structural attributes stemming from the tradition of mere office seeking approaches. Following Lupia and Strøm (1995) some of these variables shall have diverse effects depending on the kind of termination – dissolution of parliament followed by early

[24] The observation period for Serbia-Montenegro ends on June 3rd 2006 with the dissolution of the state union between the two parts by the Montenegrin parliament after a preceding referendum.

elections or simple replacement of the government. This makes it necessary not only to focus on the pooled general risk, but also on the specific early election and replacement hazards. Apart from the control variable *caretaker status* that shows the expected significant effect in all three models, a second variable controls for the maximum time a government has, from its starting point until the end of the CIEP.[25] The result is clear-cut: the less time there is until the end of the CIEP, the higher the probability of an early election. This effect confirms the common understanding that the value a party attaches to office holding is not constant, but changes through time and in relation to future prospects. The different types of government surely matter for durability, although their effects sometimes cancel each other out in the pooled model. Single party majority governments for example show no significant effect on the hazard of early elections[26], whereas these governments are significantly less likely to be replaced during the CIEP. The same pattern applies to minimal winning coalitions which only show significant negative effects on the replacement hazard, but have no influence on the occurrence of early elections. Minority governments generally are less durable: Multi party minority cabinets show higher hazards for both types of end events, single party minorities only for early elections.[27] The parliamentary weight is of significance – cabinets that contain the party with the highest Banzhaf power[28] show a higher durability. The complexity of the parliamentary bargaining environment is measured through the *effective number of relevant parties*, an index that is very similar to the one proposed by Laakso and Taagepera (1979) except for systems where one party holds the absolute majority; there it counts only one effective, relevant party (Dumont and Caulier 2003). The results do not confirm the bargaining environment assumption, rather high parliamentary fragmentation points towards lower early election hazards.

Another relevant characteristic on the systemic level is the returnability. This variable indicates whether parties that have been in power in the preceding cabinet return to power after the discretionary end of that government (Warwick 1994). Its calculation on a country basis has the drawback that only

[25] This variable replaces the postelection status which was classically used in government survival analyses and it controls additionally on the length of the CIEP.

[26] This result is partly in disaccordance with the findings of Smith (2004, p.88) who detected lower early election hazards for British single party governments with comfortable majorities. For a more in depth analysis of this relationship, a further model, testing the influence of cabinet seat share on early election hazards within the subset of single party majority governments was estimated (not presented in the tables). The result does not support Smith; the seat share even shows a *positive* influence on the early election hazard, though failing to meet the 0.1 level of significance. Thus the strategic election timing depending on the cabinets seat share that Smith observed in the special case of the UK does not only constitute no relevant characteristic among other types of government, as Saalfeld has already shown (2008, p.346), but also seems not to be of relevance for other single party majority governments.

[27] For these governments Smith (2004, p.88) is right: Single party governments that lack a majority are more tempted to search their luck in early elections than majority cabinets.

[28] The Banzhaf (1965) power index is here used as a proxy for the bargaining power a party holds. This index takes account of the fact, that it is not only the parliamentary seat share that constitutes the power of a party, but also the distribution of seats of the other parties. Accordingly the party with the highest seat share always has the highest Banzhaf value, but it need not be the only one with this bargaining power. A party with the highest Banzhaf power is not exactly the same, but sufficiently similar to what is called a "dominant party" which always holds a "credible exit threat" (Van Roozendaal 1997, p.77). The inclusion of such a party in the government should stabilize the cabinet, as this party is in the best position for renegotiations of new government constellations without letting the current government fall (Lupia and Strom 1995).

one countrywide value is generated which is based on all governments and not only on the preceding ones, as the theory would favor. On the other hand an operationalization based only on previous governments, like Warwick carries out in his latest work (2006, p.154-155 & 232), always results in a number of systematic missing values at the beginning of the observation period (depending on how many preceding governments are taken). For Warwicks sample this means only a minor loss, as only the first years after World War II are missing and still enough governments per country are available for the analysis, but in the sample used here, such an operationalization would result in the loss of nearly half the governments in Central and Eastern Europe. Therefore the less accurate but also less *case consuming* operationalization was chosen. The result is as expected: In countries where the probability of an immediate return to power is high, the hazard rate is higher, especially for replacements.

The last systemic variable is the responsiveness, indicating the proportion of cabinet parties that were able to extend their share of votes in the last parliamentary elections. It is calculated on a decade basis. The theoretical explanation for its inclusion into the model is straightforward: "High responsiveness indicates sensitivity to electoral trends and an increased probability that anticipation of future election results will destabilize existing coalitions" (King et al. 1990, p.557-558). Although we observe a significant effect on the pooled hazard ratio, this is not due to the early election hazards, as theory would expect, but due to a highly significant positive effect on the hazard for replacements.[29] This relationship surely deserves a further and more in-depth analysis.

Model 3 tests variables that were classically used in policy seeking approaches. The first four variables are simple measures of partisan disagreement which is, apart from the mere numerical fragmentation, the second important aspect of the bargaining environment. It is measured via the "ordinal disagreement" and the "ideological standard deviation", both introduced by Taylor and Herman (1971, p.33).[30] The calculation of the ordinal disagreement solely requires a clear ordering of the parties, whereas the ideological standard deviation additionally takes account of the absolute differences between the parties' ideal points on that scale. For practical reasons both measures are not calculated on a left-right ordering of all single parties within a given country. Instead the parties are first classified according to party families, that can be ordered according to the left-right-dimension more easily. Thus both measures build on the party families' seat shares within the parliament and the share of minister posts respectively. The results are on the first view at least partially astonishing: A high ordinal disagreement within parliament *reduces* the hazard ratio significantly, both for

[29] The potential interrelationship between the responsiveness and the volatility (Pedersen 1979; Shamir 1984) does not reduce the impact of the responsiveness, when controlled for in the model.

[30] A minor difference is the use of the standard deviation instead of the variance version from Taylor/Herman.

early elections as well as replacements.[31] The explanation for this unexpected influence lies within the computation formula of the indicator and the sample distribution[32]. The result is that for a number of countries no significant positive relationship between the two simple measures of parliamentary disagreement, the ordinal disagreement and the ideological standard deviation, can be observed (e.g. Australia, Germany, Finland, Iceland, Japan, Lithuania, Luxembourg and Slovakia) and for New Zealand and Portugal there is even a highly significant negative correlation. The ideological standard deviation on the contrary shows the expected pattern: a high value within parliament increases the hazard for early elections; within government it increases the replacement hazard.

A further ideological component that is tested is the polarization, indicating the presence of extreme or anti-system parties within parliament or cabinet respectively. High polarization inside the parliament reduces the room for coalitions (Laver and Schofield 1990, p.220) and additionally these parties that comprise the potential coalition are ideologically more heterogeneous than in less polarized parliaments (Sartori 1976, p.142-144). Thus high polarized parliaments should lead to shorter government durations (Powell 1994, p.146). For the presence of extreme parties within the cabinet, theory does not expect us to find significant differences in the hazards.[33] The results confirm the anticipated negative impact of parliamentary polarization on durability as well as the non-influence of extreme parties within the cabinet.

The last variable is the ideological center tendency of the strongest cabinet party. Its impact is highly significant and absolutely plausible: When the strongest cabinet party concentrates around the country- and legislature-specific ideological center, governments last considerably longer.[34]

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[31] Controls for parliamentary fractionalization, via Rae-index (Rae 1967, p.56), effective number of parties (Laakso and Taagepera 1979, p.7-8) or effective number of relevant parties (Dumont and Caulier 2003) do not affect the significant negative influence of the ordinal disagreement on the hazard rate.

[32] Leik shows that the quite similar measure of *ordinal consensus* "bears close similarity, for certain distributions, to an analogous use of variance [or standard deviation; authors note], but the two may differ widely for other distributions" (1966, p.87).

[33] First, there are only few cabinets that actually contain ministers from extreme parties; second, those cabinets mostly tend to one ideological side (either left or right) and are thus ideologically quite homogeneous – a further model using dummies for governments that consist solely of left and of right parties approves the lower hazard for ideologically homogeneous governments; and third, from a more office seeking point of view there is potentially little difference between an extreme party and a *normal* one: both try to maximize their time in power.

[34] Saalfeld as well as van Roozendaal come to quite similar conclusions, although using a much simpler approach. They find that the inclusion of the parliaments' median or central party into the government decreases the hazard rate (Roozendaal 1992, p.351; Saalfeld 2008).

In Model 4 the impact of the policy-horizons as described in paragraph 3.3 is tested. Three different measures are used: The first indicates the ideological diversity within the government, measured through the maximum Euclidean distance between the ideal points of the two most deviating cabinet parties on the three most important countrywide ideological dimensions.[35] The result confirms previous research (Warwick 1994, p.73-74): High ideological diversity inside the government leads to high hazard rates. The second variable is the mean size of the intersection sphere of the policy horizons among all simulations and the third variable indicates the probability that the salience weighted ideological mean is encompassed within the common intersection sphere.[36] Theory would expect negative hazard ratios for both variables. The estimation nevertheless draws a different picture: Both are positively correlated with the hazard rate. Whether this result is an artifact of uncontrolled heterogeneity is tested in the next model.

Model 5 in table 5 in the annex includes all attributes that have shown significant effects up to now. This best fitting model widely confirms the results so far. Some points are nonetheless worth mentioning: (1) Single party majority governments fail to show any significant impact when the other variables are controlled for; (2) the effective number of relevant parliamentary parties as well as the inclusion of the strongest parliamentary party in the government (*max. banzhaf weight*) only reduce the early election hazard, but have no impact on the replacement hazard; (3) with regard to extremist parties within the chamber, the picture gets more complicated than in the mere ideological model: high polarization still results in higher replacement hazards, but early elections are on the contrary driven by low polarization values. This result becomes graspable when we identify the countries where early elections take place frequently. In Australia, Canada, UK and Japan (and to a bit lesser extent Greece and Turkey) there are no relevant extreme parties; (4) the policy horizon variables show a similar pattern as before with an even raised level of significance. Especially the policy horizon intersection size and the probability of an encompassed ideological weighted mean which both point towards the contrary direction as stated by Warwick surely require a deeper analysis. Possible explanations could be:

[35] The ideological positions are calculated from the CMP-data as described in paragraph 3.3. For the maximum distance the ideological positions are weighted according to the party- and dimension-specific salience scores. Additionally simulations that take account of the different length of the manifestos reduce the potential for imprecision of the ideological positioning.

[36] For each legislature 200 simulations were computed. The probability of an encompassed weighted mean for the governing coalition is thus given by the number of simulations that produce such a situation, divided by the maximum of 200.

(a) the policy horizon theory as proposed by Warwick does not fit to the extended country sample used in this study – estimations using only the subsample of OECD-countries nevertheless speak against this hypothesis;
(b) the basic operationalization of the ideological positions based on the three most salient dimensions and calculated from the CMP data contain shortcomings – although the Euclidean distance measure derived from this operationalization shows exactly the expected influence, a further external validation (e.g. using the *wordscore* approach) seems appropriate;
(c) the operationalization of the policy horizons used here being based on the salience scores is either, as Warwick states (2006, p.81-83), generally not meaningful, or the *translation formula* – from salience scores to policy horizons – produces problems. This would nevertheless probably not result in a significant result pointing towards the opposite direction.

Concerning the underlying time dependence, figure 4 in the annex depicts the baseline hazards, calculated from the best fitting model. They clearly show a quite constant run for the replacement hazards and increasing hazards for early elections as well as for the pooled model. This result is in accordance with Lupia and Strøm's theoretical model as well as with previous empirical examinations (Lupia and Strom 1995; Diermeier and Stevenson 1999, 2000; Saalfeld 2008).

As highlighted in paragraph 2.1 it is necessary to test for proportional hazards, that means to test whether the "relative hazards over different covariate values are proportional" (Box-Steffensmeier and Zorn 2001, p.972). Put in a different way: for a meaningful estimation of a Cox-model the influence of a covariate (not necessarily the covariate itself!) has to be constant over time. This is important, because non-proportionality could result in heavily biased estimates. There is a number of different methods available for testing the proportionality assumption: (1) log-log-plots of the Kaplan-Meier-curves (Therneau and Grambsch 2000, p.127); (2) comparisons between the empirically observed Kaplan-Meier-curves and the curves predicted by the Cox-model (Stata 2007, p.157-163); (3) plots of scaled Schoenfeld-residuals against time or some functions of time together with a smoothed curve (LOWESS); (4) the Grambsch-Therneau-test for proportional hazards that basically tests for zero slope of the scaled Schoenfeld-residuals against time (Grambsch and Therneau 1994). Figures 5, 6 and 7 in the annex show as an example the first three graphical methods for the caretaker variable. They all suggest no problems with proportionality. Table 6 additionally presents the results of the Grambsch-Therneau test for the best fitting model. Again no

violation of proportionality can be detected. In contrast for some of the other models that have been estimated, the proportionality assumption must be rejected on grounds of this test. Nevertheless as the Grambsch-Therneau test is a very sensitive one especially for large samples and the authors themselves propose to be skeptical about its results, always first asking "does it matter" and "is it real" when non-proportionality is detected (Therneau and Grambsch 2000, p.142), there is probably no big problem with the proportionality of the hazards within the used data.

5. Conclusion

This paper started off with an overview about the research conducted in the field of government survival and especially a description of the methods used so far. It was shown that Event History Analysis (EHA) and in particular the Cox-model provides a superior way of handling these questions, compared to the pure attributes and stochastic models. In the main part of the paper the policy-horizon approach was presented as a new possibility of incorporating policy seeking theories into cabinet formation and survival models. As the operationalizations that Warwick has chosen are either too inflexible in contrast to the much bigger flexibility of the theoretical model (behavior-based method) or raise serious questions about reliability and validity (expert survey), a different operationalization was presented. It offers a new possibility of accounting for the multidimensional nature of political ideology, by rebuilding the 13 most important dimensions, extracted from expert surveys, with CMP-categories. The resulting party positioning has the basic advantage of being based on substantially interpretable dimensions, in contrast to the purely inductive standard principal component method, and of generating a continuous timeline of party positions with distinct values for every election, which expert surveys lack. The policy horizons are then calculated for the three most important dimensions per country and legislature using the inverse relationship between dimension salience and the parties' limits of compromise. In the last part of the paper the analysis of government durability is carried out, using a newly gathered dataset that includes a total of nearly 900 governments in 39 parliamentary democracies. On the one hand the results mainly confirm the *classical* explanatory factors, but on the other hand, especially with regard to the policy horizon approach, where the effects significantly point into the opposite direction as expected according to Warwick, they open up new questions.

This paper has shown that party ideology clearly matters for cabinet durability, although to a quite different extent according to the type of end event and the type of government.

Nonetheless more research that investigates further these complex relationships, both on a theoretical as well as empirical level, needs to be done, to gain a deeper understanding of this central topic within comparative research.

Annex

Figure 1a

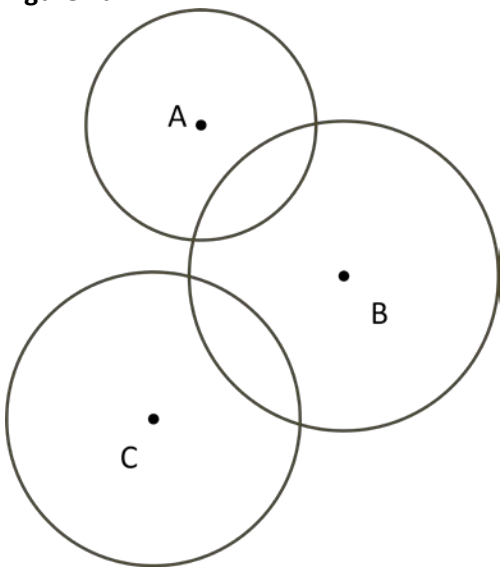
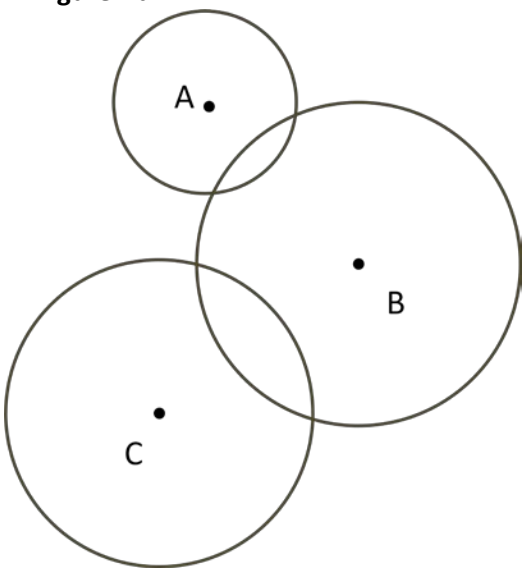


Figure 1b



The figures show ideological positions and policy horizons within a hypothetical three-party parliament on two equally salient dimensions. In figure 1b party A shows less willingness to compromise, resulting in a smaller policy horizon and consequently a lower probability to be part of a coalition government as well as a higher probability to fail, when it is part of such a coalition. Author's illustration adapted from Warwick (2006, p.9).

Figure 2a

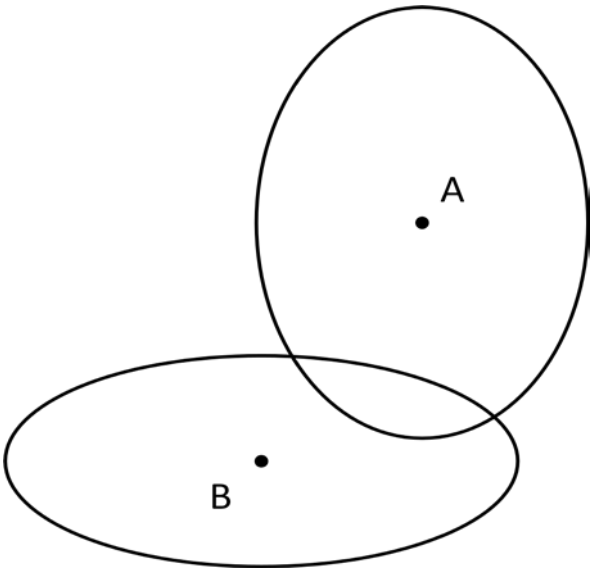
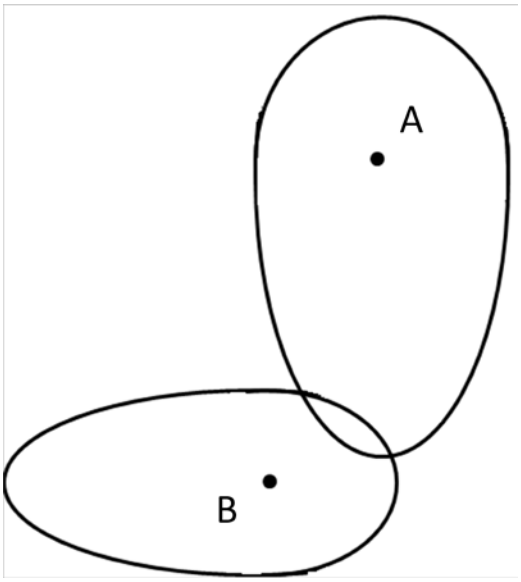


Figure 2b



The figures show ideological positions and policy horizons for two parties on two dimensions with relaxed basic assumptions. In figure 2a the salience scores attributed to each dimension can vary according to the party, in 2b the deviations from the ideal point can additionally vary according to the direction within one dimension. Author's illustration adapted from Warwick (2006, p.9).

Figure 3a

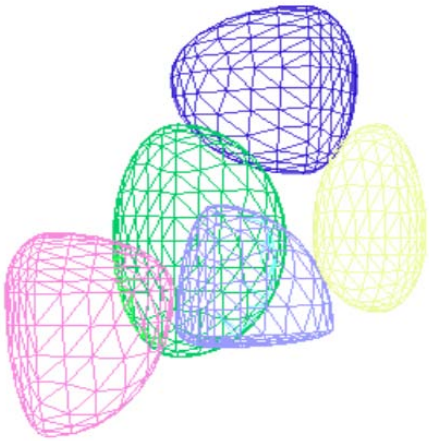
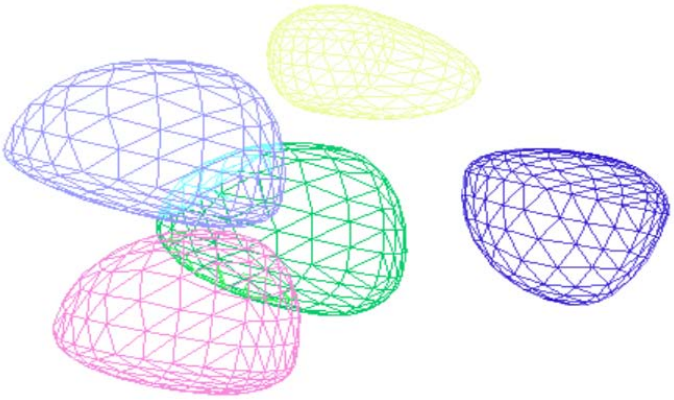


Figure 3b



The wireframe graphics show policy horizons within a hypothetical five-party parliament on three ideological dimensions. The ideal points are not separately plotted, but they lie within the irregular "egg-shaped" horizons. Both figures show exactly the same party-configuration, the only difference is the angle of view. Author's illustration using the Horizon 3D program.

Table 1: Relevant dimensions according to Laver/Hunt and Benoit/Laver and their operationalization using CMP-data.

Nr	Dimension	Exact question in Laver/Hunt 1992	Exact question in Benoit/Laver 2006	Manifesto positive (L/H B/L = 20)	Manifesto negative (L/H B/L = 1)
1	Urban vs. Rural (2006: only CEE-countries)	1 = Promote interests of urban and industrial voters above others; 20 = Promote interests of rural and agricultural voters above others	1 = Promotes interests of urban voters above others; 20 = Promotes interests of rural voters above others	Per704: middle class and professional groups (+)	Per703: farmers (+)
2	Social Policy (1992); Social Liberalism (2006)	1 = Promote permissive policies on matters such as abortion and homosexual law; 20 = Oppose permissive policies on matters such as abortion and homosexual law	1 = Favors liberal policies on matters such as abortion, homosexuality, and euthanasia; 20 = Opposes liberal policies on matters such as abortion, homosexuality, and euthanasia	Per603: traditional morality (+)	Per503: Social Justice (+) Per604: traditional morality (–)
3	Public Ownership (1992); Privatization (2006: only CEE-countries)	1 = Promote maximum public ownership of business and industry; 20 = Oppose all public ownership of business and industry	1 = Promotes maximum state ownership of business and industry; 20 = Opposes all state ownership of business and industry	Per412: Controlled Economy (+) Per413: Nationalization (+) Per 4124: Socialist Property (+) Per4131: Property Restitution (–) Per 4123: Publicly Owned Industry (+) Per 4132: Privatization (–)	Per401: Free Enterprise (+) Per4011: Privatization (+) Per4012: control of economy (–) Per4013: Property Restitution (+) Per4014: Privatization Vouchers (+)
4	Environmental Policy	1 = Support protection of environment, even at the cost of economic growth; 20 = Support economic growth, even at the cost of damage to environment	1 = Supports protection of environment, even at the cost of economic growth; 20 = Supports economic growth, even at the cost of damage to the environment	Per410: productivity (+)	Per501: Environmental Protection (+) Per 416: Anti-Growth Economy (+)
5	Centralization of Decision Making	1 = Promote decentralization of all decision making; 20 = Oppose any decentralization of decision making	1 = Promotes decentralization of all administration and decision making; 20 = Opposes any decentralization of all administration and decision making	Per301: decentralization (+) Per2033: checks and balances (+)	Per302: centralization (+)

6	Tax vs. public services	1 = promote raising taxes to increase public services; 20 = Promote cutting public services to cut taxes	1 = promote raising taxes to increase public services; 20 = Promote cutting public services to cut taxes	Per505: Welfare State Limitation (+) Per402: Incentives (+)	Per504: Welfare State Expansion (+)
7	US-Trade-links (1992: only CAN)	1 = Pro trade links with USA; 20 = Anti trade links with USA		Per407: protectionism (–)	Per406: protectionism (+)
8	Foreign Policy (only 1992)	1 = Promote development of friendly relations with Soviet Union; 20 = Oppose development of friendly relations with Soviet Union		Per101: Foreign relationships (+) Per107: Internationalism (+) Per1012: Western States (+) Per1013: Eastern European Countries (+) Per1014: Baltic States (+) Per1015: Nordic Council (+) Per 1021: Russia/USSR/CIS (–)	Per102: Foreign relationships (–) Per109: Internationalism (–) Per1011: Russia/USSR/CIS (+) Per1022: Western states (–) Per1023: Eastern European Countries (–) Per1024: Baltic States (–) Per1025: Nordic Council (–) Per1026: SFR Yugoslawia (–)
9	Deregulation		1 = Favors high levels of state regulation and control of the market; 20 = Favors deregulation of markets at every opportunity	Per403: Market regulation (+) Per412: Controlled economy (+)	Per401: Free Enterprise (+) Per402: Incentives (+) Per405: Corporatism (+)
10	Nationalism (2006: only CEE-countries)		1 = Strongly promotes a cosmopolitan rather than a [country name] national consciousness, history and culture; 20 = Strongly promotes a [country name] national rather than a cosmopolitian consciousness, history ans culture	Per602: National way of life (–) Per607: multiculturalism (+) Per 107: Internationalism (+) Per6072: Multiculturalism pro Roma (+)	Per601: national way of life (+) Per608: multiculturalism (–) Per109: Internationalism (–) Per6081: Multiculturalism pro Roma (–) Per6013: National Security (+)
11	Quebec (2006: only CAN)		1 = Supports the sovereignty of Quebec; 20 = Opposes the sovereignty of Quebec	Per204: constitutionalism (–) Per 301: decentralization (+) Per602:national way of life (–)	Per203: constitutionalism (+) Per302: centralization (+) Per601: national way of life (+)
12	Defense Policy (2006: only Japan)		1 = Promotes reduced spending on defense; 20 = promotes increased spending on defense	Per105: military (–)	Per:104 military (+)

13	EU-Joining (2006: only non EU-countries)		1 = opposes joining the EU; 20 = Favors joining the EU	Per108: European Integration (+)	Per110: European Integration (–)
14	EU-Authority (2006: only EU 15 minus France and Ireland)		1 = Favors increasing the range of areas in which the EU can set policy; 20 = Favors reducing the range of areas in which the EU can set policy		
15	EU larger/stronger (2006: only France)		1 = Opposes an expanded and stronger EU; 20 = Favors an expanded and stronger EU		
16	EU-Peacekeeping (2006: only EU 15)		1 = Favors [country name] involvement in European security and peacekeeping missions; 20 = Opposes any [country name] involvement in European military affairs		
17	EU-Accountability (2006: only EU-15)		1 = Promotes the direct accountability of the EU to citizens via institutions such as the European Parliament; 20 = Promotes the indirect accountability of the EU to citizens via their own national governments		
18	Neighbor Relations (2006: only Lithuania)		1 = Supports closer relations with Eastern neighbors rather with NATO and western Europe; 20 = Supports closer relations with NATO and western Europe rather than with eastern neighbors	Absorbed by the foreign policy dimension	
19	Northern Ireland (1992 and 2006: only IRL)	1 = Pro British Presence in Northern Ireland; 20 = Anti British Presence in Northern Ireland	1 = Supports long-term maintenance of Northern Ireland as Part of United Kingdom; 20 = Supports goal of a united Ireland	Absorbed by the nationalism and foreign policy dimension	

20	Nuclear (1992: only GB and NZ)	1 = Antinuclear; 20 = Pronuclear		Absorbed by the environmental policy dimension
21	Health-Care (only AUS, CAN, NZ, JAP, und USA)		1 = Advocates that the government should provide universal free health care; 20 = Advocates that medical expenses should be paid by individuals and private insurance plans	Absorbed by the welfare dimension (Tax vs. public services)
22	Religion (1992: only Italy; 2006: only CEE-countries)	1 = Anticlerical; 20 = Proclerical	1 = Supports religious principles in politics; 20 = Supports secular principles in politics	Absorbed by multiculturalism
23	US-Affairs (2006: only AUS, CAN, NZ, JAP, and USA)		1 = Supports an expanded US military and political role in world affairs; 20 = Opposes an expanded US military and political role in world affairs	Not covered by the CMP-data
24	Immigration		1 = Favors policies designed to help asylum seekers and immigrants integrate int0 [country name] society; 20 = Favors policies designed to help asylum seekers and immigrants return to their country of origin	Not covered by the CMP-data
25	Media Freedom (2006: only CEE-countries)		1 = The mass media should be completely free to publish any material they see fit; 20 = The content of mass media should be regulated by the state in the public interest	Not covered by the CMP-data

ideological position:
$IP = \frac{x-y}{x+y}$
salience/relevance of a dimension: $salience = x + y$

Table 2: Calculation of the ideological positions and salience scores.

Nr	Dimension	Description	Calculation ideological position	Calculation dimension salience
1	Urban vs. Rural (worker/white collar employee vs. farmer)	+1 = preferential treatment of the countryside/rural population; -1 = preferential treatment of the urban/industrial population	(Per704 – Per703)/(Per703+Per704)	(Per703+Per704)
2	Social liberalism	+1 = traditional morality and little social liberalism; -1 = no traditional morality and large social liberalism	[Per603 – (Per503+Per604)]/(Per503+Per603+Per604)	(Per503+Per603+Per604)
3	Privatization vs. state ownership	+1 = Privatization negative and public ownership positive; -1 = Privatization positive and public ownership negative;	[(Per412+Per413+Per4123+Per4124+Per4131+Per4132) – (Per401+Per4011+Per4012+Per4013+Per4014)]/(Per412+Per413+Per4123+Per4124+Per4131+Per4132+Per401+Per4011+Per4012+Per4013+Per4014)	(Per412+Per413+Per4123+Per4124+Per4131+Per4132+Per401+Per4011+Per4012+Per4013+Per4014)
4	Productivity vs. environmental protection	+1 = maximum productivity at the expense of the environment; -1 maximum environmental protection at the expense of economic growth	[Per410 – (Per416+Per501)]/(Per410+Per416+Per501)	(Per410+Per416+Per501)
5	Decentralization vs. centralization	+1 = maximum decentralization and separation of powers; -1 = maximum centralization	[(Per301+Per2033) – Per302]/(Per301+Per302+Per2033)	(Per301+Per302+Per2033)
6	Welfare vs. taxes	+1 =minimal welfare and low taxes; -1 = maximum welfare	[(Per402+Per505) – Per504]/(Per402+Per504+Per505)	(Per402+Per504+Per505)
7	Foreign policy	+1 = primarily positive, friendly relations to other (western) countries and affirmation of international cooperation; -1 = primarily bad relations to other (western) countries, but good relations to Russia	[(Per101+Per107+Per1012+Per1013+Per1014+Per1015+Per1021) – (Per102+Per109+Per1011+Per1022+Per1023+Per1024+Per1025+Per1026)]/(Per101+Per107+Per1012+Per1013+Per1014+Per1015+Per1021+Per102+Per109+Per1011+Per1022+Per1023+Per1024+Per1025+Per1026)	(Per101+Per107+Per1012+Per1013+Per1014+Per1015+Per1021+Per102+Per109+Per1011+Per1022+Per1023+Per1024+Per1025+Per1026)
8	EU	+1= in principle pro EU-(Integration); -1= in principle vs. EU-(Integration)	[Per108 – Per110]/(Per108+Per110)	(Per108+Per110)

9	Deregulation	+1 = state regulation of the market and maximum control over economy; -1 = maximum freedom of the market and the economy from state interventions	[(Per403+Per412) – (Per401+Per402+Per405)]/(Per401+Per402+Per403+Per405+Per412)	(Per401+Per402+Per403+Per405+Per412)
10	Free trade vs. protectionism	+1 = maximum free trade; -1 = maximum protectionism	(Per407 – Per406)/(Per406+Per407)	(Per406+Per407)
11	internationalism vs. nationalism	+1 = against nationalist tendencies; -1= in favor of nationalistic tendencies	[(Per107+Per602+Per607+Per6072) – (Per109+Per601+Per608+Per6013+Per6081)]/(Per107+Per602+Per607+Per6080+ Per109+Per601+Per608+Per6013+Per6081)	(Per107+Per602+Per607+Per6080+ Per109+Per601+Per608+Per6013+Per6081)
12	Regionalism/ secessionism	+1 = Regions with maximum independence, weak central government; -1 = strong central government and national/constitutional patriotism	[(Per204+Per301+Per602) – (Per203+Per302+Per601)]/(Per204+Per301+Per602+ Per203+Per302+Per601)	(Per204+Per301+Per602+ Per203+Per302+Per601)
13	military	+1 = disarmament, low military expenditures; -1 = arms build up, high military expenditures and a generally high relevance of the military	(Per105 – Per104)/(Per105+Per104)	(Per105+Per104)

The 13 dimensions are constructed out of the CMP-data as shown in table 1. Columns 4 and 5 show the calculation of the ideological positions and the salience scores. The "PerXXX" indicate the CMP-category. Author's table.

Table 3: Countries in the dataset

Country	*Start observation period*	*Number of governments*	*Mean government duration (in days)*	*Country*	*Start observation period*	*Number of governments*	*Mean government duration (in days)*
Albania	05.12.1991	14	402,8	Japan	05.22.1946	50	441,4
Australia	11.01.1946	30	730,7	Latvia	05.07.1990	16	387,7
Austria	12.20.1945	24	908,2	Lithuania	03.17.1990	18	350,2
Belgium	03.13.1946	36	598,3	Luxembourg	11.14.1945	19	1190,8
Bosnia-Herzegowina	12.20.1990	13	363,5	Macedonia	03.07.1991	13	471,1
Bulgaria	12.20.1990	9	669,1	Moldova	04.19.2001	2	1461,0
Canada	08.20.1945	24	960,2	Netherlands	07.03.1946	25	913,3
Croatia	05.30.1990	9	619,0	New Zealand	19.12.1946	29	767,5
Czech Republic	07.03.1992	9	647,0	Norway	11.06.1945	29	782,0
Denmark	11.08.1945	31	730,9	Poland	12.06.1991	15	381,0
Estonia	10.21.1992	10	506,3	Portugal	07.23.1976	17	653,4
Finland	04.18.1945	42	520,5	Rumania	06.20.1990	17	331,6
France	11.21.1945	59	374,9	Serbia-Montenegro	07.14.1992	9	536,8
Germany	09.20.1949	27	789,0	Slovakia	06.27.1990	11	585,1
Great Britain	07.27.1945	22	1045,3	Slovenia	05.16.1990	11	531,5
Greece[(a)]	04.04.1946	56	337,6	Spain	07.05.1977	10	1086,8
Hungary	05.23.1990	7	858,0	Sweden	10.28.1948	27	813,9
Iceland	02.04.1947	25	933,8	Turkey[(b)]	05.22.1950	39	462,2
Ireland	02.18.1948	22	937,1	Ukraine	06.19.1997	9	414,8
Italy	05.23.1948	55	393,2				

Gaps in the timeline: (a) 04.24.1967-07.25.1974; (b) 05.30.1960-11.19.1961 and 09.21.1980-12.12.1983. Source: Author's dataset on government terminations.

Table 4: Cox-model of government survival

Independent Variable **Model 1: decade & country** **Reference category: Belgium 1950-1959**	Hazard Ratio pooled (Std. Err.)	Independent Variable **Model 2** **"policy blind" structural attributes**	Hazard Ratio pooled (Std. Err.)	Hazard Ratio early elections (Std. Err.)	Hazard Ratio replacements (Std. Err.)
1945-1949	1.54 (0.30)**	Duration till end of CIEP (in months)	0.98 (0.003)***	0.96 (0.004)***	1.00 (0.00)
1960-1969	0.68 (0.10)**	Number of cabinet parties	1.15 (0.05)***	1.04 (0.07)	1.20 (0.06)***
1970-1979	0.80 (0.11)	Caretaker gov.	9.38 (1.76)***	17.95 (5.60)***	7.08 (1.71)***
1980-1989	0.70 (0.10)**	Single Party Majority gov.	0.75 (0.13)*	1.21 (0.34)	0.55 (0.12)***
1990-1999	0.55 (0.08)***	Minimal Winning Coalition	0.71 (0.09)***	1.06 (0.25)	0.62 (0.10)***
since 2000	0.28 (0.05)***	Single Party Minority gov.	1.40(0.23)**	2.38 (0.64)***	1.08 (0.23)
Albania	2.66 (1.01)**	Multi Party Minority gov.	1.42 (0.19)***	1.85 (0.45)**	1.32 (0.22)*
Austria	0.56 (0.17)*	Max. banzhaf weight party in gov.	0.76 (0.10)**	0.57 (0.12)**	0.88 (0.14)
Bosnia-Herzegovina	2.07 (0.85)*	Effect. No. of relevant parl. parties	0.95 (0.03)	0.86 (0.05)**	0.99 (0.04)
Canada	0.59 (0.17)*	Responsiveness (on decade basis)	2.57 (0.51)***	1.61 (0.51)	3.47 (0.88)***
Estonia	2.16 (0.94)*	Returnability	2.25 (0.55)***	1.81 (0.68)	2.58 (0.82)***
France	2.19 (0.51)***	N failed due to risk	627	233	394
Germany	0.56 (0.18)*	Log-Likelihood	-3522.67	-1234.61	-2291.74
Great Britain	0.59 (0.18)*	LRχ^2	275.49	192.81	172.90
Greece	2.11 (0.50)***	**Model 3 „classical" ideological attributes**			
Iceland	0.46 (0.15)**	Ordinal disagreement (parl.)	0.54 (0.09)***	0.47 (0.12)***	0.62 (0.13)**
Ireland	0.54 (0.17)*	Ideological std. deviation (parl.)	1.30 (0.20)*	1.76 (0.43)**	1.02 (0.21)
Italy	2.10 (0.50)***	Ordinal disagreement (gov.)	1.10 (0.24)	0.83 (0.36)	1.23 (0.31)
Japan	1.85 (0.44)**	Ideological std. deviation (gov.)	1.24 (0.13)**	1.05 (0.21)	1.40 (0.18)***
Latvia	2.98 (1.07)***	Polarization (parl.)	4.80 (1.99)***	1.58 (1.27)	7.97 (3.92)***
Lithuania	3.31 (1.12)***	Polarization (gov.)	0.65 (0.24)	0.42 (0.33)	0.69 (0.29)
Luxembourg	0.23 (0.09)***	Ideological centre tendency	0.35 (0.10)***	0.31 (0.15)**	0.35 (0.13)***
Macedonia	2.14 (0.88)*	N failed due to risk	547	206	341
Netherlands	0.47 (0.15)**	Log-Likelihood	-3114.02	-1144.17	-1989.76
New Zealand	0.38 (0.14)***	LRχ^2	67.78	16.88	82.37
Norway	0.49 (0.16)**	**Model 4 policy-horizons**			
Poland	3.45 (1.28)***	Max. euclid. distance (gov.)	1.54 (0.11)***	1.17 (0.15)	1.77 (0.16)***
Romania	3.19 (1.11)***	Policy horizon intersection size	1.07 (0.02)***	1.08 (0.03)***	1.05 (0.02)**
Sweden	0.39 (0.14)**	Prob. of weighted mean encomp.	1.21 (0.14)*	1.03 (0.18)	1.38 (0.21)**
Ukraine	2.62 (1.30)*	N failed due to risk	548	212	336
N failed due to risk	627	Log-Likelihood	-3132.57	-1183.16	-1979.47
Log-Likelihood	-3517.49	LRχ^2	33.71	11.31	39.96
LRχ^2	290.50				

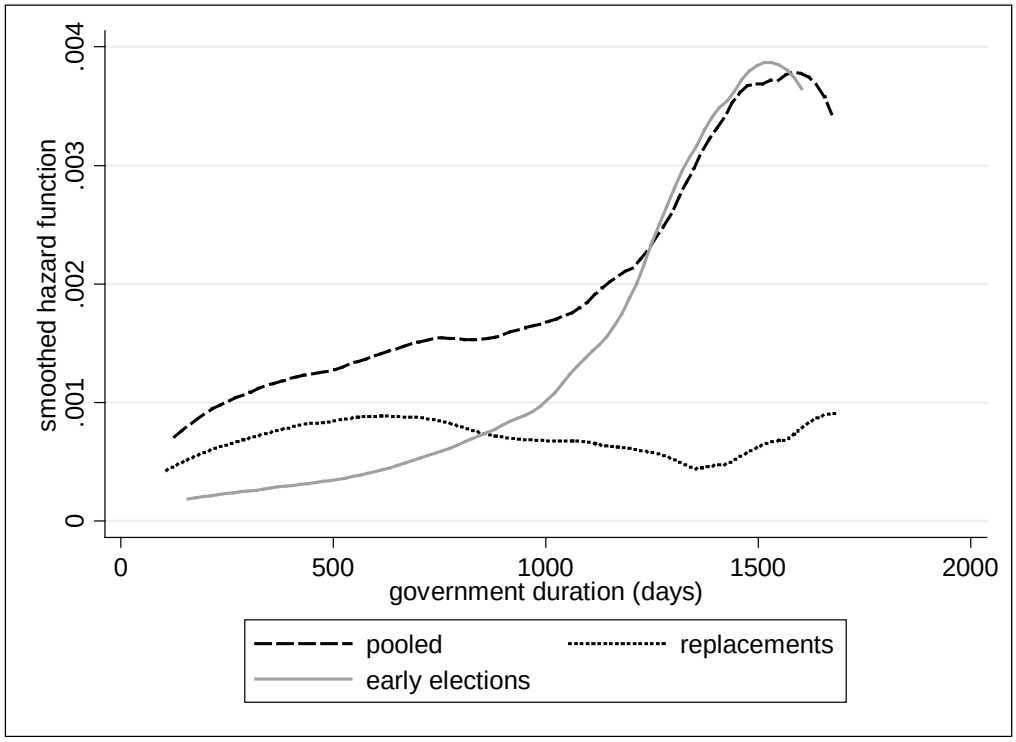
The table presents the hazard ratios. Values greater than one indicate an increasing hazard; standard errors in parentheses; * = p <0.1; ** = p < 0.05; *** = p< 0.01. In Model 1 only those countries are listed that show a significant difference (at least *) in the hazard ratios compared to the reference category.

Table 5: Cox-Model of government survival

Model 5 **Best fit** Independent Variable	Hazard Ratio pooled (Std. Err.)	Hazard Ratio early elections (Std. Err.)	Hazard Ratio replacements (Std. Err.)
Duration till end of CIEP (in months)	0.98 (0.003)***	0.95 (0.01)***	1.01 (0.004)
Number of cabinet parties	1.13 (0.07)*	1.00 (0.12)	1.18 (0.09)**
Caretaker gov.	10.67 (2.38)***	22.01 (8.18)***	8.34 (2.42)***
Single Party Majority gov.	1.05 (0.27)	1.29 (0.59)	0.84 (0.27)
Minimal Winning Coalition	0.72 (0.12)*	0.96 (0.30)	0.65 (0.13)**
Single Party Minority gov.	1.97 (0.53)**	2.89 (1.41)**	1.49 (0.49)
Multi Party Minority gov.	1.96 (0.34)***	2.29 (0.76)**	1.88 (0.39)***
Max. banzhaf weight party in gov.	0.82 (0.14)	0.58 (0.16)**	0.98 (0.20)
Effect. No. of relevant parl. parties	0.95 (0.04)	0.87 (0.06)*	0.99 (0.04)
Responsiveness (on decade basis)	2.19 (0.49)***	1.52 (0.52)	2.72 (0.80)***
Returnability	4.20 (1.24)***	3.82 (1.79)***	4.63 (1.79)***
Ordinal disagreement (parl.)	0.57 (0.09)***	0.75 (0.19)	0.50 (0.10)***
Ideological std. deviation (gov.)	1.39 (0.15)***	1.32 (0.25)	1.43 (0.19)***
Polarization (parl.)	1.42 (0.45)	0.11 (0.08)***	3.41 (1.25)***
Ideological centre tendency	0.42 (0.15)**	0.49 (0.29)	0.35 (0.16)**
Max. euclid. distance (gov.)	1.38 (0.16)***	1.55 (0.34)**	1.25 (0.17)
Policy horizon intersection size	1.07 (0.02)***	1.10 (0.03)***	1.05 (0.03)**
Prob. of weighted mean encomp.	1.36 (0.18)**	1.25 (0.28)	1.37 (0.24)*
N failed due to risk	536	204	332
Log-Likelihood	-2938.90	-1047.505	-1872.72
LRχ^2	268.27	180.28	196.65

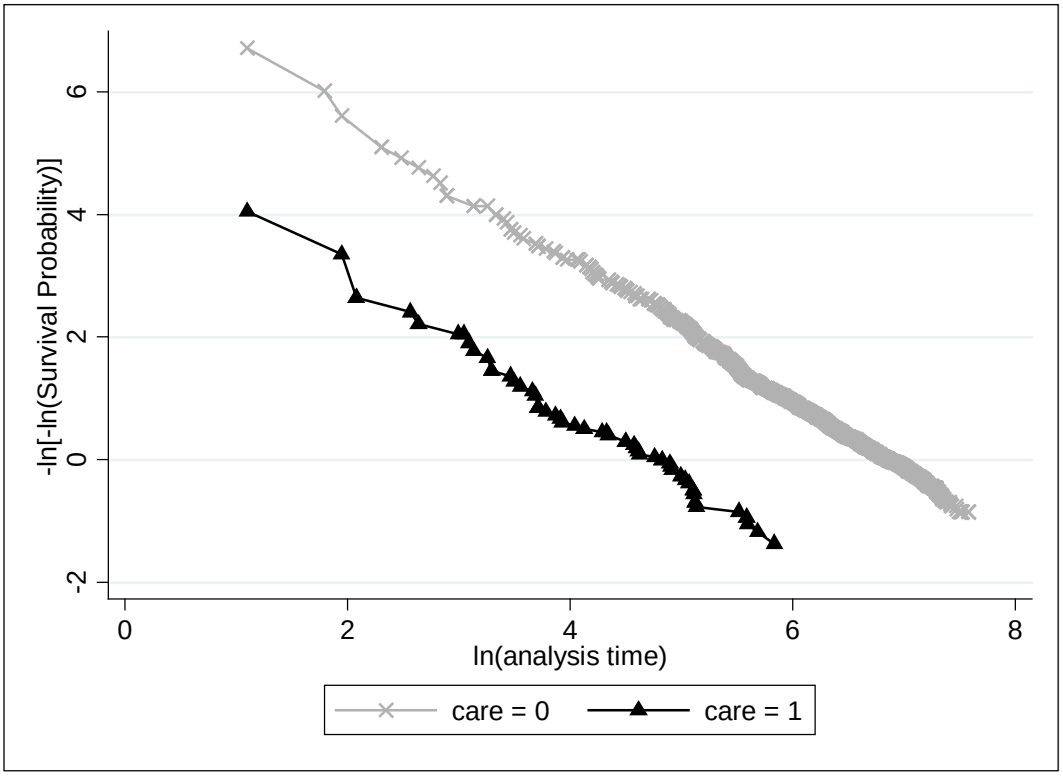
The table presents the hazard ratios. Values greater than one indicate an increasing hazard; standard errors in parentheses; * = p <0.1; ** = p < 0.05; *** = p< 0.01.

Figure 4: Baseline Hazards



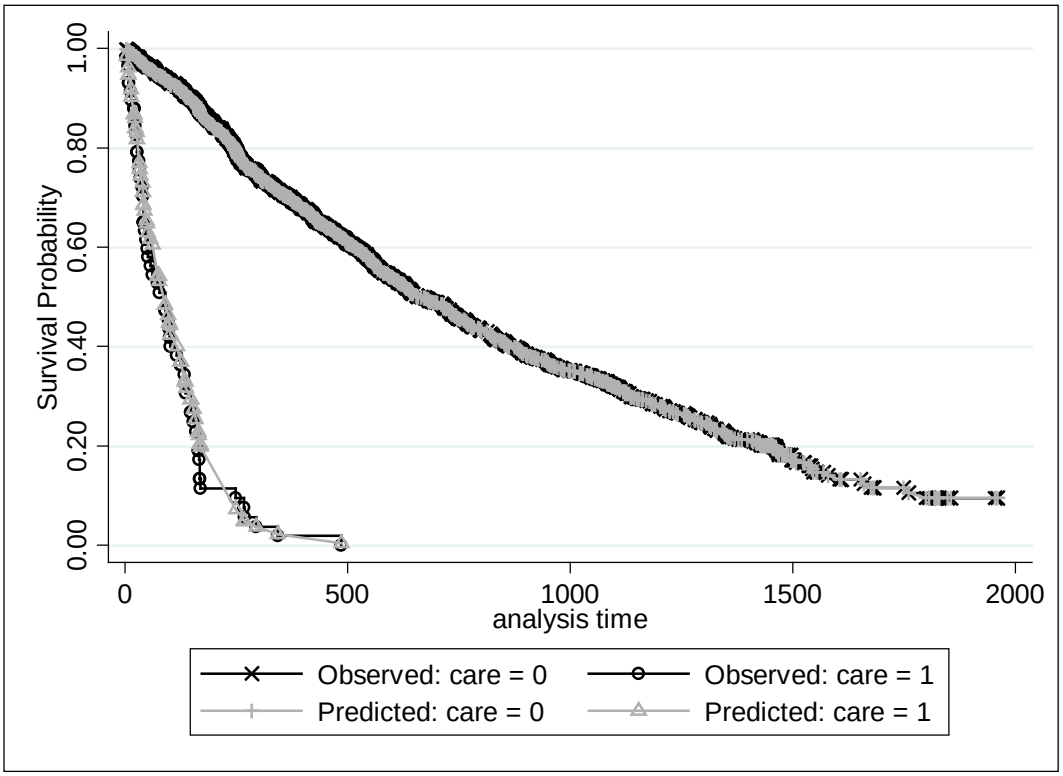
Author's figure.

Figure 5: Graphical test for proportional hazards I – Kaplan-Meier log-log-plots



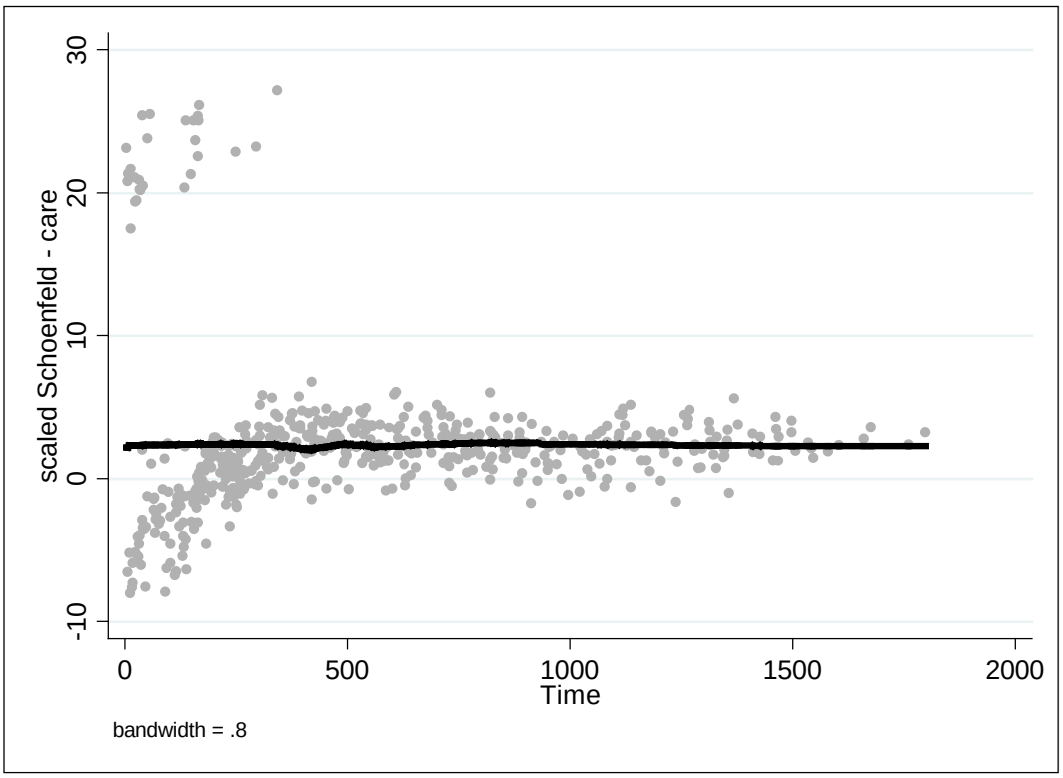
Author's figure. The two lines for caretaker and non-caretaker cabinets run sufficiently parallel, indicating no problems with the proportional hazards assumption.

Figure 6: Graphical test for proportional hazards II – Kaplan-Meier vs. Cox-predicted survival curves



Author's figure. The two predicted lines for caretaker and non-caretaker cabinets are virtually congruent with the observed Kaplan-Meier-curves. Thus the proportionality assumption is true.

Figure 6: Graphical test for proportional hazards III – Scaled Schoenfeld-residuals vs. time (LOWESS fitted)



Author's figure. The grey dots indicate the scaled Schoenfeld-residuals and their LOWESS fitted black line shows no significant deviation from zero slope. Therefore proportional hazards can be assumed for the caretaker variable (the Schoenfeld-residuals are based on the best fitting model 5).

Tabelle 6: Grambsch-Therneau test on proportionality of the hazards

Independent Variable	rho	χ^2	df	Prob >χ^2
Duration till end of CIEP (in months)	-0.003	0.01	1	0.935
Number of cabinet parties	-0.016	0.18	1	0.674
Caretaker gov.	-0.012	0.08	1	0.778
Single Party Majority gov.	0.019	0.23	1	0.632
Minimal Winning Coalition	-0.051	1.67	1	0.196
Single Party Minority gov.	-0.023	0.32	1	0.574
Multi Party Minority gov.	0.025	0.38	1	0.536
Max. banzhaf weight party in gov.	-0.006	0.02	1	0.887
Effect. No. of relevant parl. parties	-0.044	1.23	1	0.267
Responsiveness (on decade basis)	-0.017	0.18	1	0.673
Returnability	-0.040	0.87	1	0.352
Ordinal disagreement (parl.)	0.009	0.05	1	0.827
Ideological std. deviation (gov.)	-0.044	0.97	1	0.325
Polarization (parl.)	0.003	0.01	1	0.933
Ideological centre tendency	0.036	0.77	1	0.381
Max. euclid. distance (gov.)	0.042	1.08	1	0.298
Policy horizon intersection size	0.044	0.93	1	0.335
Prob. of weighted mean encomp.	-0.015	0.13	1	0.721
Global test		21.41	18	0.259

The test builds on the pooled version of the best fitting model 5. Neither the global test, nor any of the variables alone are below the critical value of 0.1 for the Prob >χ^2 . The proportionality of the hazards is thus not violated.

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