Staying Alive: A Framework of Inter-Party and Intra-Party Threats to Prime Ministerial Survival

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Abstract

The importance of prime ministers in parliamentary democracies is unchallenged. While there are many studies of *government* survival, *prime ministerial* survival is by far not as well studied. I provide a framework to study prime ministerial survival. I argue that prime minister replacements by rival parties (*inter*-party politics) are governed by factors unlike those that drive replacements by the prime minister party (*intra*-party politics). I show evidence for this claim using competing risk models and data from 20 Western democracies in the period 1951-2014. I find that factors that decrease rival party replacement risk (e.g., PM party is largest party in parliament), increase PM party replacement risk and *vice versa*. The findings have major implications for the study of governments, prime ministers and political representation.

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Prime ministers (PMs) are at the very heart of parliamentary democracy (Glasgow, Golder, and Golder, 2011; Laver and Schofield, 1998; Warwick and Druckman, 2006). They have considerable leverage over policy-making (Poguntke and Webb, 2007), portfolio allocation (Bäck, Debus, and Müller, 2016; Indridason and Kam, 2008), and many times even government termination, assembly dissolution, and election timing (Schleiter and Morgan-Jones, 2009; Smith, 2004; Strøm and Swindle, 2002). More over, they are the focus of most election campaigns (Poguntke and Webb, 2007) and have significant decision power in international organizations such as the European Union (Majone, 1998; Moravcsik, 2002). As a result, both national and international media debate the consequences PM replacements at length. Despite the prominence of PMs, the factors that prolong or shorten the rule of PMs are hardly understood (Grotz and Weber, 2017).

I argue that PMs are at constant risk of being replaced in two different ways: They can be replaced by a challenger from a rival party (rival party replacement) or an intra-party challenger (PM party replacement). These replacement types differ in the party affiliation the incoming PM has, yet, more importantly they differ in the underlying politics. While the (outgoing) PM party lost its ability to chose the PM if a rival party replacement happens, the PM party maintains (and actively uses) its ability to choose a PM when a PM party replacement takes place. Thus, there are *intra*-party factors that trigger PM party replacements, whereas *inter*-party politics trigger rival party replacements (Quiroz Flores and Smith, 2011). Given these considerations, I also argue that the factors which determine these risks differ.

Consider Gordon Brown's election to and removal from the premiership in the United Kingdom for clarification. He assumed office after his co-partisan, Tony Blair, resigned following intra-party pressure and electoral losses in May 2007. At the time, the Labour party actively used its ability to choose a new PM and forced a PM party replacement (Fisher, 2008). In the general election in May 2010, however, the Labour party lost its parliamentary majority and Brown resigned on the day that the Conservative-Liberal coalition agreement became public. His Labour party was no longer able to choose the PM which lead to a rival party replacement with the Conservative David Cameron as

incoming PM (Whitaker, 2011).

While there are many possible applications of the framework I develop, in this study I link PM party ability to choose the PM to its parliamentary support and its centrality in the party system (Glasgow, Golder, and Golder, 2011; Laver, 1998; Martin and Stevenson, 2001; Schleiter and Morgan-Jones, 2009). As these increase, I expect the probability of rival party replacement to decrease. Furthermore, I link PM party willingness to internally replace the PM to bad electoral prospectives and a low risk of rival party replacement. As I argue, these are shaped by PM performance in terms of elections, the economy, and PM age on the one hand. On the other hand, I expect PM parties to be more likely to replace the PM at times when rival party replacement risks are low, i.e., what makes rival party replacement less likely makes PM party replacement more likely.

I test these expectations using a competing risks model (Diermeier and Stevenson, 1999) on a dataset from 20 democracies in the period 1951-2014. I find strong evidence supporting the claim that PMs face two competing risks (i.e., PM party replacement and rival party replacement) and that these risks are trade-offs. The results are also robust to using different samples of countries including Eastern European democracies and controlling for country-specific heterogeneity.

The results bear relevance for several fields of research. First, I add to the study of prime ministers a framework of substantive arguments of why and *how* they are replaced that is easily adjusted to encompass additional factors. Up until now, important considerations such as a strong position in the party system and a strong signal to win future elections have not been in the focus of attention (Grotz and Weber, 2017; Quiroz Flores and Smith, 2011). However, previous research on prime minister selection (Bäck and Dumont, 2008; Glasgow, Golder, and Golder, 2011; Grotz and Weber, 2017; Isaksson, 2005; Kang, 2009; Mattila and Raunio, 2004; Warwick, 1994) and party leadership survival (Andrews and Jackman, 2008; Bennister and Heppell, 2016; Bynander and 't Hart, 2006, 2008; Cross and Blais, 2012; Ennser-Jedenastik, Schumacher, et al., 2015; Horiuchi, Laing, and Hart, 2015; O'brien and Shomer, 2013; So, forthcoming) indicate that these are the nuts and bolts of prime ministers' struggle for power. In particular, I argue and

present evidence that accomplishments that enhance political survival in one arena may depress political survival in the other arena (e.g., being the largest party in parliament). In the final section, I outline several routes for future research that rely on the provided framework that link institutions, critical events, PM behavior, and political outcomes to PM survival.

Second, I add a different definition of government termination to the study of government termination. To my knowledge, virtually all research considers a government ended when either the PM changes, the composition of cabinet parties changes, or election have taken place (e.g., Laver, 1998; Martin and Stevenson, 2001; Schleiter and Morgan-Jones, 2009). While this definition is most valuable and certainly justified for many applications, it also runs the risk of overemphasizing the importance of small parties joining or leaving the government, especially when these do not change other central government characteristics (e.g., majority status). Similarly, when governments re-form after elections (e.g, Thatcher's or Kohl's governments), it is certainly justified to *also* conceive a PM's rule as a single government spell.

Third, I contribute to the literature on leadership survival (Bueno De Mesquita and Siverson, 1995; Bueno De Mesquita and Smith, 2010; Bueno de Mesquita et al., 2003; Gandhi and Przeworski, 2007; Licht, 2010, see also Ahlquist and Levi, 2011) by looking more closely at how a specific type of democratic systems, i.e., parliamentary and to some extent semi-presidential systems, decide on when to dispose their leadership (Quiroz Flores and Smith, 2011).

Fourth, I spell out and empirically test channels that directly link intra-party politics to PM survival. Previous research has focused on establishing the links between intra-party institutions, preferences and party performance on the one hand, and *party* leadership survival on the other hand (Andrews and Jackman, 2008; Bennister and Heppell, 2016; Bynander and 't Hart, 2006, 2008; Cross and Blais, 2012; Ennser-Jedenastik, Schumacher, et al., 2015; Gruber et al., 2015; Horiuchi, Laing, and Hart, 2015; O'brien and Shomer, 2013; So, forthcoming). While many PMs are party leaders at the same time, not all are. Moreover, these studies do not consider the parliamentary element of

PM survival.

As it is beyond the scope of this paper to test all individual causal mechanisms suggested by these different branches of research in detail, I present evidence that many factors highlighted by these debates affect PM survival time. In the final section, I provide an outlook on how future research can use the provided framework to further analyze additional factors.

Staying Alive

While the legislature has the formal power to remove or replace the PM in parliamentary democracies only (Fish and Kroenig, 2009), a PM needs the support of multiple principals in order to stay in office (Müller, 2000). I argue that to avoid being replaced by a rival party PM, PMs have to ensure that their party holds on to the ability to choose the PM, i.e., that no other party can form a government under their leadership. By contrast, to evade PM party replacement they need to ensure support within their own parliamentary party group. As these are different goals, I discuss them separately.

Avoiding Rival Party Replacement

In any parliamentary system, avoiding rival party replacement means avoiding the formation of an opposing coalition that seeks to install an alternative PM. For illustrative purposes, I assume that there is an opposing formateur who seeks to form an opposing coalition that will make her PM (Bueno de Mesquita et al., 2003). Previous research suggests that factors such as PM party size and PM party policy centrality determine the opposing formateur's ability to form an opposing coalition, which in turn determines PM survival (Glasgow, Golder, and Golder, 2011; Laver, 2003). Simply put: Whatever makes forming an opposing coalition harder for the challenger, makes rival party replacement less likely.[1]

[1]I note that it is beyond the scope of this paper to consider the entire array of factors that previous research links to a challenger's ability to form an opposing coalition. Therefore, I focus here on the two most prominent factors: the incumbent PM party's support in parliament and its ideological centrality in parliament. It is not difficult, yet, to adjust the provided framework to learn about how other factors

The central factor that makes it hard for a challenger to form an opposing coalition is parliamentary support for the PM. Most obviously, when facing a PM with PM party majority support in parliament, the challenger has very little prospect of replacing the PM because she has to rely on defectors from the PM party. While defections from the party line are not unheard of, they are fairly rare in parliamentary systems to begin with (O'brien and Shomer, 2013). A defection that makes a party missing out on the prime ministership, the "preeminent political post in parliamentary democracies" (Glasgow, Golder, and Golder, 2011, p. 936), is likely to deem an MP unreliable—certainly for her own party, yet, most likely also for future co-partisan MPs who will work with her after party switching. As (mis)trust plays a central role for ambitious MPs in parliamentary party groups (Cross and Blais, 2012, pp. 128–136), most MPs are caring to not be perceived untrustworthy. Furthermore, voters punish MPs for switching (Grose and Yoshinaka, 2003). As switching is very costly to individual MPs, challengers rarely succeed in converting PM party MPs into opposition MPs.

When PM support is based on a coalition of multiple parties, the mechanisms that make it hard for a challenger to from an opposing coalition are both similar and somewhat different. Coalitions governments form because member parties feel that they can maximize their share of office, policy influence and votes by joining (Dodd, 1976, 33-40; Laver, 1998; Lupia and Strøm, 1995). Thus, the challenger is yet again in need of defectors to unseat the incumbent PM. The difference is that the defection of an entire parliamentary party group may do the trick. It is more likely that an entire party group switches (i.e., that a government party leaves the government) because the aforementioned risks for individual MPs do not apply to defecting party groups. Defecting parties are punished for their actions in future government formation attempts, yet only by those parties on which they defected and not by opposition parties (Tavits, 2008). Nevertheless, defecting parties do usually not benefit from defections (Warwick, 2012). In sum, while entire party defections are still unlikely, they are more likely than PM party defections. These considerations lead to the first two hypotheses.

impact PM survival too.

Government Majority Hypothesis: A PM is less likely to be replaced by a rival party if she supported by a majority in parliament, *ceteris paribus*.

PM Party Majority Hypothesis: A PM is even less likely to be replaced by a rival party if she supported by a majority of her own party rather than a majority coalition, *ceteris paribus*.

Irrespective of whether a majority supports the PM or not, additional parliamentary support reduces her rival party replacement risk. This is because individual defections are less likely to threaten her majority support status or reduce the set of MPs which the challenger can draw on to form an opposing coalition, respectively. Moreover, PM party support is, again, particularly useful as it decreases the damage coalition party defections can cause. These arguments give rise to the following two hypotheses.

Government Support Hypothesis: A PM is less likely to be replaced by a rival party PM the more support she has in parliament, *ceteris paribus*.

PM Party Support Hypothesis: A PM is less likely to be replaced by a rival party PM the more support her party has in parliament, *ceteris paribus*.

Glasgow, Golder, and Golder (2011, p. 938) argue that the largest party in parliament has an advantage over other parties when forming governments and securing the premiership. First, the choice of a formateur favors the largest party over other parties in many countries. Second, the largest party often claims that it has a public mandate to lead the government. Third, the largest party in parliament is advantaged in forming a majority coalition because every opposing formateur needs at least as many coalition partners, and often more, to jump the majority hurdle. I thus expect the largest party in parliament to be rather safe from rival party replacement.

Largest Party Hypothesis: A PM is less likely to be replaced by a rival party PM if her party is the largest party in parliament, *ceteris paribus*.

Finally, virtually every model over government formation that is not policy-blind, acknowledges the advantage the median party has over other parties in forming governments due to its centrality (Laver and Schofield, 1998, 111; Martin and Stevenson, 2001, 33-34; Schofield, 1993). It is simply not possible to form an ideologically connected majority coalition without the median party (Laver, 1998, p. 15). In terms of the formation of an opposing coalition, not being able to include the median party implies one of two undesirable outcomes. Either the opposing coalition has to include at least one party from either side of the median party, or it cannot be a majority coalition. Both situations impede the formation of an opposing coalition that can unseat the sitting PM and, thus, make rival party replacement less likely.

> *Median Party Hypothesis:* A PM is less likely to be replaced by a rival party PM if her party is the median party in parliament, *ceteris paribus*.

Avoiding Intra-Party Replacement

When an extra-parliamentary party wants to replace its own PM, it cannot help but rely on its MPs to initiate the necessary steps in parliament. Hence, once a PM is in office, the only real intra-party threat to her is her party's parliamentary party group that can shield her from extra-parliamentary pressure to resign, increase the pressure to resign, or even force a replacement. As MPs care foremost about re-election (Cross and Blais, 2012, p. 143) and since the PM is central to a party's ability to generate votes (Clarke, Ho, and Stewart, 2000; Poguntke and Webb, 2007), I argue that factors that depress a party's (expected) vote share, increase PMs' risk to be replaced by her own party.

Following this line of argument, a bad electoral performance should increases PM party replacement risk. In fact, research on party leadership survival suggests that electoral support is crucial to secure intra-party support (Andrews and Jackman, 2008). By revealing the true support the PM party gained or lost in the electorate relative to the previous election, seat gains strengthen the PM's position within her parliamentary party group, thereby, making PM party replacement less likely. Seat losses, however, reduce the intra-party backing and make PM party replacement more likely (see also Glasgow,

Golder, and Golder, 2011, pp. 943–944).

Even if replacing the PM has only short-term effects (Pedersen and Schumacher, 2015), e.g., due to appearing divided (Greene and Haber, 2015), parties are nevertheless likely to replace the PM. Just as PMs may reshuffle their cabinet in times of bad performance (Kam and Indridason, 2005) or sports clubs replace the coach when playing a bad season (Gamson and Scotch, 1964), parliamentary party groups replace the PM to demonstrate dedication and ability to act. Since party leadership change affects voters' knowledge about party policy (Somer-Topcu, 2017), PM change may be more than just a straw to clutch.

> *Electoral Performance Hypothesis:* A PM is less (more) likely to be replaced by her own party, the better (worse) her party's electoral performance, *ceteris paribus*.

Another major indicator of (future) voter support for the government is the economic development. When voters "see prosperity, they give support. When they see business conditions in decline, they withdraw support. This reward–punishment pattern can be counted on, election after election, country after country" (Lewis-Beck and Stegmaier, 2007, p. 530).

> *Economic Performance Hypothesis:* A PM is less (more) likely to be replaced by her own party, the better (worse) the country's economic performance, *ceteris paribus*.

Besides PM performance, PM age plays a critical role in PM party replacements. As leaders grow older, their physical ability and sometimes also their commitment to govern vanishes. It does not matter whether leaders realize these things on their own and seek replacements themselves, or whether they are pushed out of office (Bynander and 't Hart, 2008). In both cases, I argue that growing age makes at least the parliamentary party group realize that some other PM could do the job too, drawing support from the incumbent PM to an intra-party challenger. As a result, older PMs are more likely to

be replaced by their own parties (see also Andrews and Jackman, 2008; Cross and Blais, 2012; Horiuchi, Laing, and Hart, 2015).

> *PM Age Hypothesis:* A PM is more likely to be replaced by her own party, the older she is, *ceteris paribus*.

There are multiple reasons to believe that MPs' electoral prospects increase when the PM is a co-partisan. First, an incumbent PM is a central figure on the media, particularly during campaigns (Elmelund-Præstekær, Hopmann, and Nørgaard, 2011; Green-Pedersen, Mortensen, and Thesen, 2017; Schoenbach, Ridder, and Lauf, 2001; Semetko, 1996) which grants the PM party an advantage in setting the campaign agenda. This is relevant for individual PM party MPs because the campaign agenda is likely to (at least partially) reflect their party's strengths rather than its weaknesses. Second, PMs' overly proportional appearance on the media signals viability to govern to voters (Kam and Zechmeister, 2013), and hence campaigning under the same corporate design (e.g., party logo) helps MPs to get reelected in both electoral systems with party-centrist incentives and personalist incentives. Third, being the PM's co-partisan grants MPs access to government resources that other MPs do not have (Denemark, 2000). They can exploit these to obtain information for their campaign or to obtain perks for their districts or the population they represent. Fourth, in those political systems in which the PM has significant influence on election timing, PMs call elections when their electoral prospects are favorable (Kayser, 2005; Schleiter and Morgan-Jones, 2009; Smith, 2004). It is immediate that MPs prefer to have elections at times when it benefits their party rather than a rival party.

Since the premiership is valuable to MPs for their desire of reelection, they will not replace their PM when this puts the premiership at risk. At times when the risk of rival party replacement is high, it may be the PM's ability to manage the political circumstances (e.g., a government excluding the largest parliamentary party or a minority government) that secures the premiership to the PM party. Replacing the PM in such circumstances is a very risky act to PM party MPs since a less capable PM may not survive the rival party threat. Given the importance of the premiership to MPs, I expect

MPs to not replace their PM when the risk of rival party replacement is high. I thus predict a PM to be rather safe from PM party replacement when a rival party threat is easily observable to PM party MPs. Put differently, MPs face incentives to have an eye on the *inter*-party threats to their PM, and to not replace her when these are high.

> *Intra-Party Government Majority Hypothesis:* A PM is more likely to be replaced by her own party, when she is supported by a parliamentary majority, *ceteris paribus*.
>
> *Intra-Party PM Party Majority Hypothesis:* A PM is more likely to be replaced by her own party, when she is supported by a parliamentary majority of her own party, *ceteris paribus*.
>
> *Intra-Party Largest Party Hypothesis:* A PM is more likely to be replaced by her own party, when her party is the largest party in parliament, *ceteris paribus*.
>
> *Intra-Party Median Party Hypothesis:* A PM is more likely to be replaced by her own party, if her party is the median party in parliament, *ceteris paribus*.

I now turn to testing these hypotheses empirically.

Methodology

Since I claim that the factors leading to rival party replacements and PM party replacements are distinct, I follow the literature on government survival and estimate competing risk models (Diermeier and Stevenson, 1999). Competing risk models are generalizations of event history models that distinguish between different types of failure, e.g., a PM can be replaced by (1) a rival party PM, (2) a co-partisan, or (3) because she resigns for non-political reasons (Kalbfleisch and Prentice, 2002, pp. 247–277). Effectively, I estimate two Cox Proportional Hazard Models, each treating one type of replacement as event of interest and the other two as censored observations. Formally, I estimate

$$h_i^j(t) = h_0^j(t) exp(\mathbf{X}_{i,t}^j \beta^j)$$

where $h_i^j(t)$ is PM i's hazard to fail from risk j at time t, $h_0^j(t)$ is the corresponding baseline hazard at time t and $\mathbf{X}_{i,t}^j$ are the explanatory variables for risk j and unit i at t, β^j are the risk specific coefficients to be estimated. As some of the covariates are time-varying, I follow standard protocol and split PM survival time in sub-periods of constant covariates. Each of these observations is treated as censored, only the last observation may end with an event. I also cluster standard errors at the PM spell level to correct for the interdependence of these observations (Box-Steffensmeier and Jones, 2004, pp. 95–117).

For the rival replacement hazard, I define:

$$\begin{aligned}\mathbf{X}_{i,t}^r\beta^r = & \\ & \beta_1^r \times \text{[Government: Majority]} \\ & + \beta_2^r \times \text{[PM Party: Majority]} \\ & + \beta_3^r \times \text{[Government: Seat Share]} \\ & + \beta_4^r \times \text{[PM Party: Seat Share]} \\ & + \beta_5^r \times \text{[PM Party: Largest Party]} \\ & + \beta_6^r \times \text{[PM Party: Median Party]}\end{aligned}$$

where brackets indicate variables whose measurements I detail below.

The Cox proportional hazard model rests on the assumption that hazards are proportional over time, and I test if this assumption is violated. Because I find that the variable [PM Party: Largest Party] may violate the assumption,[2] I add an interaction of it with the logarithm of the time a PM has served in a given spell up until the given point in time. This allows the effect of these variables to vary over time (Box-Steffensmeier and Jones, 2004, pp. 136–137).

[2] A Grambsch and Therneau (1994) test for proportional hazards clearly rejects the null hypothesis that the hazard of the [PM Party: Largest Party] variable is proportional ($p < .01$).

For the PM party replacement hazard I specify:

$$
\begin{aligned}
\mathbf{X}^p_{i,t}\beta^p = & \\
& + \beta^p_1 \times [\text{Government: Majority}] \\
& + \beta^p_2 \times [\text{PM Party: Majority}] \\
& + \beta^p_3 \times [\text{PM Party: Largest Party}] \\
& + \beta^p_4 \times [\text{PM Party: Median Party}] \\
& + \beta^p_5 \times [\text{PM Party: Change Seat Share}] \\
& + \beta^p_6 \times [\text{GDP Growth}] \\
& + \beta^p_7 \times [\text{PM: Age}]
\end{aligned}
$$

Again, interactions with logged survival time are included when statistical tests indicate that the proportional hazards assumption may be violated.[3]

Measurements

To test these hypotheses, I combine several data sources on Western democracies. It is obvious that the theoretical arguments apply to parliamentary democracies in which the PM is both chosen and replaced by the legislature. Hence, I include parliamentary democracies in my sample. Similarly, the theoretical arguments do not apply to presidential democracies because the head of government (president) has a direct electoral mandate independent of her party and the legislature (Mainwaring and Shugart, 1997, p. 14).[4] I therefore exclude presidential democracies from the sample. It is not immediate how to treat semi-presidential systems, however. In some countries, such as Austria, government formation is dominated by the parliament, and the president is hardly involved in making

[3]The Grambsch and Therneau (1994) test indicates that the covariates [PM: Age] ($p < .03$), and [PM Party: Median Party] ($p < .01$) may violate the proportional hazards assumption.

[4]Note that this definition also includes three Israeli PMs who were directly elected between 1996 and 2003 (Hazan, 1996).

political decisions (Müller, 2003, p. 89). In these circumstances, the arguments should apply. In France, by contrast, government formation is dominated by the president and, thus, the logic of PM replacement should not follow the theoretical reasoning tested here. I opt to err on the side of caution and include semi-presidential countries if the president has low influence on government formation according to Siaroff (2003). As a consequence, the empirical tests are harder because the theory may not apply to all cases it is tested against. Furthermore, I show in the supplementary material on sensitivity analysis that excluding semi-presidential democracies altogether does not alter the findings. Neither does controlling for country-specific heterogeneity or looking at East European MPs. In total, I obtain a dataset on 300 PMs in 20 countries in the period 1951-2014.[5]

To determine the dependent variables, I need information on how long a PM is consecutively in office and due to which risk she fails. I obtain data on PM tenure from the Parlgov dataset (Döring and Manow, 2016). Note that in contrast to many models of government survival (for an overview see Laver, 1998), such a spell ends when a new PM assumes office only, i.e., neither on election day, nor when the government composition changes or the incumbent PM is installed as a caretaker PM. If PMs serve multiple spells, e.g., when they are replaced by somebody else and return to power, they enter the dataset a second time, yet their tenure clock starts ticking at zero.

I distinguish between three types of PM replacements: (1) rival party replacements, (2) PM party replacements, and (3) voluntary resignations. Voluntary resignations include all types of replacements for which other replacement reasons seem most unlikely to be the cause (e.g., death, or illness). To assign each PM to the right category, I first check what party affiliation each PM's successor has. If the outgoing and ingoing PMs are of different parties, I categorize the replacement as rival party replacement. If the PMs are co-partisans, I also check if the PM left office voluntarily. I draw on data from Müller and Strøm (2003) as well as the Political Data Yearbooks published in the Eu-

[5]These countries are Australia, Austria, Belgium, Canada, Denmark, Finland, Germany, Greece, Iceland, Ireland, Israel, Italy, Luxembourg, the Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, and the United Kingdom. See also Figure SM1 in the supplementary material. In the section on sensitivity analyses in the supplementary material, I also present and discuss findings based on eleven Eastern European countries.

ropean Journal of Political Research, and if not available there on newspaper reports to decide on voluntary resignations.[6] If a PM did not leave office voluntarily, I consider her replacement a PM party replacement. I treat voluntary resignations as censored in both PM party replacement and rival party replacement models.

For the independent variables, I measure [PM Party: Seat Share] in percentages of all parliamentary seats using the information on parliamentary seats in the Parlgov data (Döring and Manow, 2016). [PM Party: Change Seat Share] is the change in seat share between the penultimate election and the current point time. On the day after election day, this variable captures the electoral gains or losses the party had in the recent election. This value is carried on until the next election unless PM party seat share changes in course of a legislative term (e.g., due to a party split). Then, not only the variable [PM Party: Seat Share], yet, also [PM Party: Change Seat Share] are correspondingly updated.

[Government: Seat Share] is the joint share of parliamentary seats in percentages of all parties identified as government members in the Parlgov data. If the incumbent government is a single-party government, PM party seat share and coalition seat share are identical. [Government: Majority] and [PM Party: Majority] are dummy variables that take the value 1 if the coalition seat share variable or the PM party seat share variables are greater 50%, respectively. They are updated whenever any government party's seat share changes in the Parlgov Data.

Coding median party status requires both data on party size and parties' ideological positions. I use the Parlgov data for the former and MARPOR data for the latter. The MAPOR project trains coders who read party manifestos and assign their content to pre-specified categories. The well-know rile index captures parties' ideological positions on a left-right dimension: The more parties mention left categories, the more leftist they are placed and *vice versa* (Volkens et al., 2017). I use these data and assign the PM party a 1 on the [PM Party: Median Party] variable if it is the median party, and a 0 otherwise.

[6]The complete list of sources used is available upon request.

[PM: Age] is the PM age in years. Furthermore, I use economic growth as an indicator of economic performance. [GDP Growth] is the percentage change in real GDP in a given year relative to the previous year. Data are taken from Penn's World Table (Feenstra, Inklaar, and Timmer, 2015).

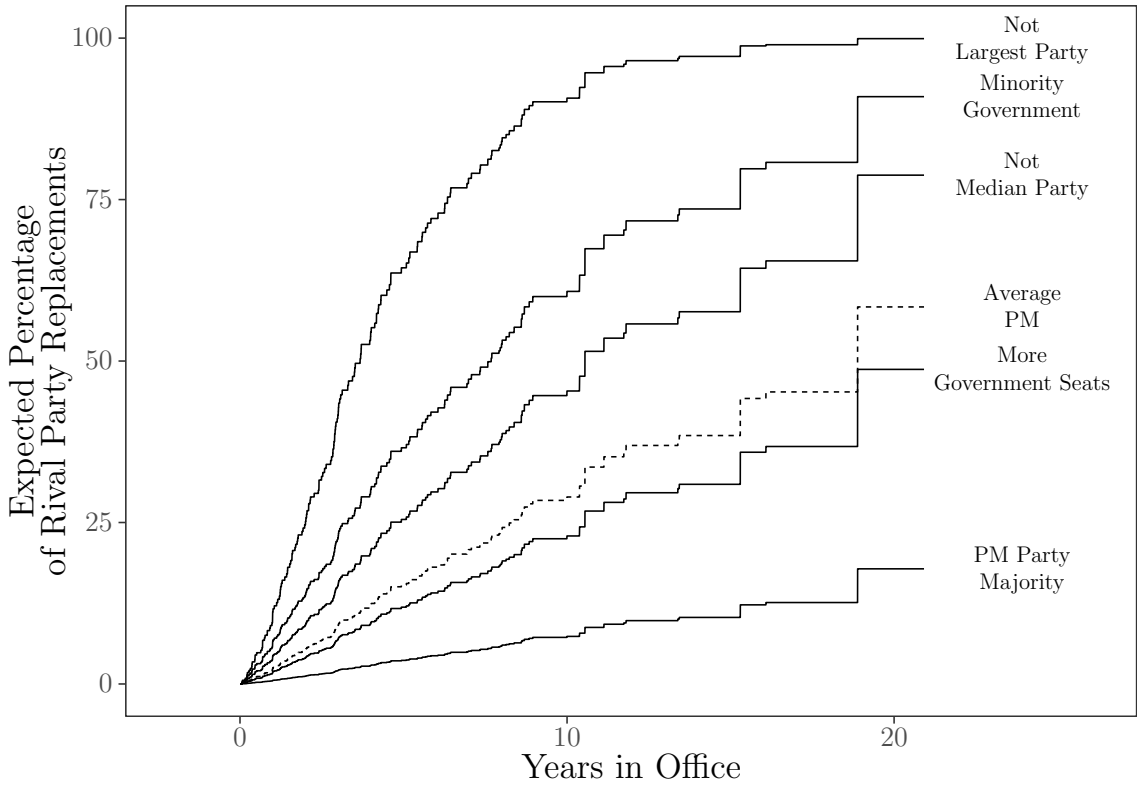
In total, I obtain data on 417,884 days of 300 PM spells in 20 countries in the time period 1951-2014. Most of the data sources provide daily data, i.e., I know the exact date a PM came into office. Some sources, however, provide data for years only (e.g., GDP growth data). In these cases, I use a data point for an entire year. Data on parties' policy positions are available in election years only, and I assign a new value on election day and carry it on until the next election. Table SM2 in the supplementary material summarizes these facts, and gives an overview over variables' summary statistics. Figure SM1 in the supplementary material visualizes the countries and time spells included in the analysis. It also shows the termination type for each PM spell.

Table 1. Determinants of Rival Party and PM Party Repacements

	Replacement Type	
	Rival Party	PM Party
	(1)	(2)
[Government: Majority]	−0.907	−0.432
	(0.246)	(0.267)
[PM Party: Majority]	−1.465	−0.301
	(0.755)	(0.353)
[Government: Seat Share]	−0.022	
	(0.010)	
[PM Party: Seat Share]	−0.003	
	(0.009)	
[PM Party: Largest Party]	−0.637	2.033
	(1.179)	(0.725)
log(Time) × PM Party: Largest Party]	−0.177	
	(0.169)	
[PM Party: Median Party]	−0.570	5.980
	(0.193)	(2.124)
log(Time) × [PM Party: Median Party]		−0.832
		(0.305)
[PM Party: Seat Share Change]		−0.070
		(0.016)
[GDP Growth]		0.044
		(0.037)
[PM: Age]		−0.116
		(0.087)
log(Time) × [PM: Age]		0.020
		(0.013)
PMs at Risk	300	300
Events	169	76

PM spell clustered standard errors in parantheses

Figure 1. Comparison of Determinants of Rival Party Replacement



Note: The average PM's party is the median party and the largest party in parliament with 40.02% seat share that governs in a majority government with 54.39% government seat share. More government seats refers to a government seat share of 66.61% (one standard deviation increase). Minority Government depicts a PM with 50% seat share. Not Largest Party and Not Median Party refer to setting the corresponding dummy variable to 0. Other variables are set as in the Average PM scenario.

Results

Table 1 shows the results of the regression analyses.[7] Since hazard rates are hard to interpret in terms of substantial PM survival, I also plot the percentage of PMs that are expected to be replaced by a rival party or a co-partisan at different points in PM tenure in Figures 1 and 2, respectively. I evaluate the rival party replacement hypotheses before turning to the PM party replacement hypotheses.[8]

[7]All additional computations used in the discussion below are based on these regression analyses and are available upon request.

[8]In the supplementary material, I test the robustness of the results by controlling for country-specific heterogeneity in PM survival times and using a dataset on clearly parliamentary countries only, and a second dataset on Eastern Europe. While results do change slightly with respect to specific variables and hypotheses, the underlying findings are upheld, i.e., that rival party replacement risks and PM party replacement risks differ from one another.

Rival Party Replacement

According to the Majority Government Hypothesis, PMs are less likely to be replaced by a rival party PM when they are supported by a majority government. Thus, the coefficient on the [Government: Majority] variable should be negative and statistically significant. Model 1 in Table 1 confirms this. Majority government PMs' hazards to be replaced by a rival party PM is by 60% ([26%; 78%] is the 95% confidence interval) smaller than minority government PMs' hazards. As Figure 1 shows, within the first four years of their rule, roughly 30% of minority government PMs are replaced by a rival party PM. This is almost three times as many as majority government PM are expected to fail in the same time span (11.9%). This is strong evidence in favor of the Majority Government Hypothesis.

To confirm that PMs are even less likely to be replaced by a rival party when their own party controls a government in parliament (PM Majority Party Hypothesis), the coefficient on the [PM Party: Majority] variable should be negatively signed and statistically significant—even while controlling for a government majority. Model 1 of Table 1 indicates that the coefficient is in fact negative and marginally statistically significant. Figure 1 reveals that PMs who can rely on a majority of their own party are almost immune to rival party replacement. After four years in office, less than 3% of PMs with a co-partisan majority in parliament are expected to be replaced by a rival party. This figure is about 10 percentage points greater for PMs who fall just short of a PM party majority, yet head a majority coalition government with comparable parliamentary support. I conclude that there is substantive, yet statistically marginal, support for the PM Majority Hypothesis.

According to the Government Support Hypothesis more parliamentary support should decrease the odds of rival party replacements. Again, this should hold even when controlling for majorities. The Government Support Hypothesis is supported if the coefficient on the [Government: Seats Share] variable is negative and statistically significant. While it is negative, it is only marginally statistically significant. Moreover, the size of its effect hinges also on whether the government is a majority government. When the government

is supported by 50.1% of legislators, an increase of government seat share by 12.22 percentage points (one standard deviation), leads almost to a four percentage point decrease in expected rival party replacements (15.4% to 10.7%) within the first four years of PM tenure. The same amount of increase in government support from 37.51% to 49.9%, however, leads to an eight percentage points decrease in the expected rival party replacement rate in the same time span (38% to 30%). In both cases, additional government support in parliament provides PMs addition protection against rival party replacement, however, the effect is stronger when the government does not hold a majority in parliament. This is support for the PM Support Hypothesis, nevertheless, jumping the hurdle of majority support has a particularly strong impact on the likelihood of rival party replacements (see above).

Even though the coefficient on the [PM Party: Seat Share] variable is negative as the PM Party Support Hypothesis implies, it is not statistically significant. This indicates that PM party seat share in parliament is no different for PM rival party replacement risks than junior coalition partners' seat shares when controlling for corresponding majorities. This finding contradicts the PM Party Support Hypothesis.

Since the [PM Party: Largest Party] variables is also interacted with PM tenure, a negative and statistically significant joint effect of the [PM Party: Largest Party] variables would provide evidence for the Largest Party Hypothesis. The results indicate that the effect becomes more negative over PM tenure and is statistically significant 38 days after a PM assumes office. Overall, the effect is of high importance for rival party replacements. As Figure 1 shows, 55% of PMs that are of the largest parliamentary party are expected to be replaced by a rival partisan in the first four years of their tenure. This result are strong evidence in favor of the Largest Party Hypothesis.

Moreover, being the median party in parliament decreases the risk of being replaced by a rival party PM as the Median Party Hypothesis claims. The coefficient on the [PM Party: Median Party] variable is negative and statistically significant as expected. During the first four years in office (Figure 1), an additional 9% of PMs are expected to be replaced by a rival party. These PMs would not be expected to suffer this fate if they

were the parliamentary median party.

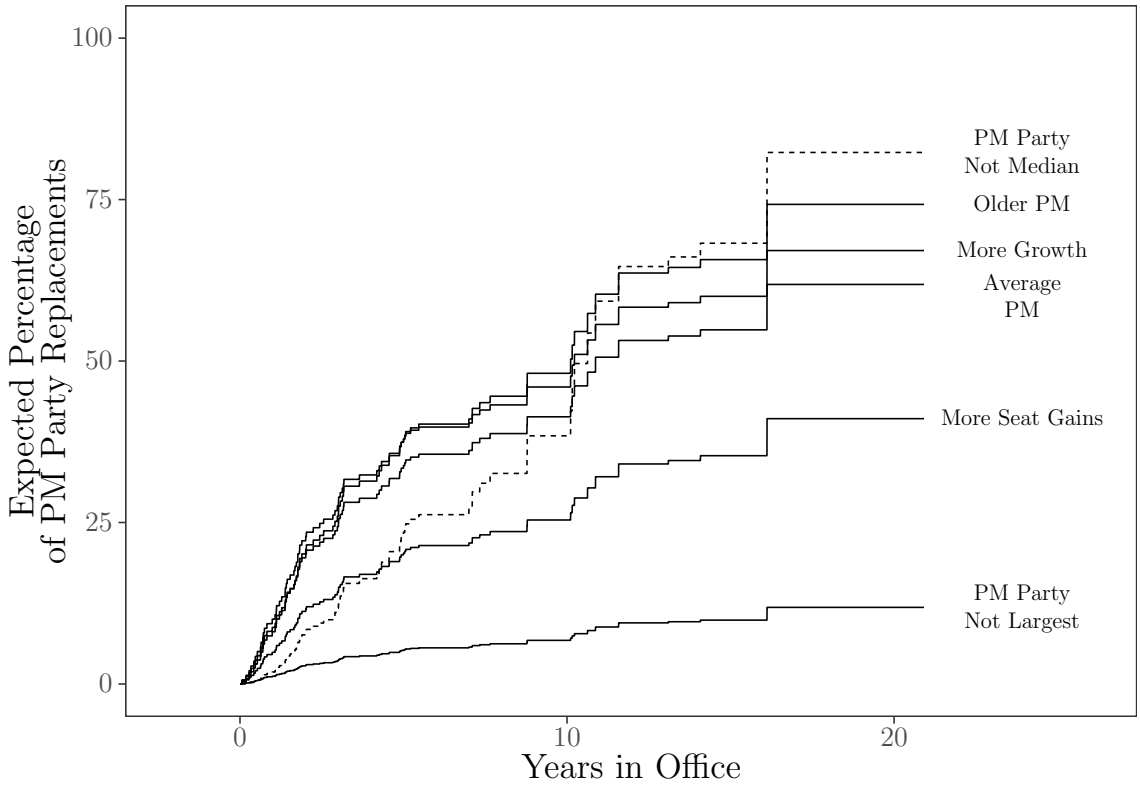
Overall, I conclude that when the PM party has a special position in the party system, it is significantly less likely that a rival party PM assumes office. Such a special position is characterized by being the largest parliamentary party, being able to draw on a parliamentary majority (coalition), or even better a PM party majority, and by being the median party in parliament. These results indicate that findings from the government formation literature and the government termination literature (Diermeier and Stevenson, 1999; Glasgow, Golder, and Golder, 2011; Laver, 2003; Martin and Stevenson, 2001; Schleiter and Morgan-Jones, 2009) carry over to PM survival. However, even PMs of such strong or dominant parties (Peleg, 1981) face risks to their careers, yet, they are rather rooted in intra-party politics to which I turn now.

PM Party Replacement

To support the Electoral Performance Hypothesis, i.e., that electoral success shields from PM party replacements, the coefficient on the [PM Party: Seat Share Change] variable should be negative and statistically significant. Model 2 in Table 1 shows that this result holds up. Figure 2 further clarifies that a standard deviation more seat gains (8.5 percentage points) reduces expected PM party replacements substantively. While 71% of average PMs with 1.37 percentage point seat share increase are expected to survive four years or longer in office without PM party replacement, 83% of PMs with a 8.51 percentage point increase in seat share are expected to do so. These results are clear support for the Electoral Performance Hypothesis.

Above, I also argue that economic performance shapes a PM's ability to avoid intra-party replacement (Economic Performance Hypothesis). I expect good economic performance to reduce the likelihood of PM party replacement. The coefficients on the [GDP Growth] variable should be negative and statistically significant to provide evidence for the Economic Performance Hypothesis. Table 1 shows that the effect is small, statistically insignificant and positive. Thus, it does not provide any evidence in favor of the Economic Performance Hypothesis. Note that the insignificant effect may hint at the

Figure 2. Comparison of Determinants of PM Party Replacement



Note: The average PM's party is the median party and the largest party in parliament with 40.02% seat share that governs in a majority government with 54.39% government seat share. Moreover, there is a 3.3% GDP growth rate, the PM is 56 years old, and has gained 1.37 percentage points in seat share since the previous election. Not Largest Party and Not Median Party refer to setting the corresponding dummy variable to 0. Metric variables are increased by one standard deviation. In detail, more seat gain pertain to a PM party seat gain of 9.88 percentage points, more growth indicates an economy with GDP growth of 6.57%, and the older PM is 65 years old. Minority Government depicts a PM with 49.9% seat share. In all cases, other variables are set as in the Average PM scenario.

point that it is not always attractive to internally replace a PM when the incoming PM would have to deal with a depressed economy. While it is beyond the scope of this paper to scrutinize this result in full detail, this interpretation seems reasonable in light of the strong relationship between economic developments and vote choices that the economic voting literature reports (Lewis-Beck and Stegmaier, 2007).

The PM Age Hypothesis suggests that older PMs are more likely to be replaced by a co-partisan. This expectation is supported when the joint coefficient on the [PM: Age] and the [log(Time) $\times$ PM: Age] variables is positive and statistically significant. This is the case after roughly 2.7 years of PM tenure. However, the effect is substantially small. In Figure 2, the lined labeled "Older PM" indicates a PM that is one standard

deviation older than the average PM (65 and 57 years). Even after eight years in office, the gap in replacement rates is a mere 6 percentage points. While the effect becomes stronger the older a PM is and the longer she has been serving, the support for the PM Age Hypothesis is not particularly strong.

The Intra-Party Majority Government Hypothesis and the Intra-Party PM Party Hypothesis state that PM party replacement is more likely when the PM is supported by a parliamentary majority or a PM party majority respectively. For these hypotheses to be supported the coefficients on the [Government: Majority] and the [PM Party: Majority] variables should be positive and statistically significant. In fact, however, both coefficients are negative. The coefficient on the [Government: Majority] variable is even marginally statistically significant. The sensitivity analyses below reveal that this effect may be driven by the semi-presidential democracies in the sample. Irrespective of the exact reason for this finding, I cannot report evidence in favor of either hypothesis.

PMs who are affiliated with the largest parliamentary party are more likely to be replaced by a co-partisan according to the Intra-Party Largest Party Hypothesis. It suggests that the coefficient on the [PM Party: Largest Party] variable should be positive and statistically significant. Model 2 in Table 1 indicates that this holds true. Figure 2 further reveals that after four years in office, more than seven times as many PMs from the largest party are expected to have been internally replaced compared to PMs who are not from the largest parliamentary party (4% vs. 29%). In combination with the finding that PMs who are not of the largest party are very likely to be replaced by a rival party, this finding is particularly interesting. PMs clearly face a trade-off between being threatened by a rival party challenger or their own party.

Finally, the Intra-Party Median Party Hypothesis expects that PMs are more often replaced by co-partisans if their party is the median party in parliament. The statistically significant and positive joint effect of the [PM Party: Median Party] and [log(Time) $\times$ PM Party: Median Party] variables confirms the Intra-Party Median Party Hypothesis.[9] Figure 2 shows that after four years in office, more than one in three PMs who are

[9]The joint effect becomes insignificant after about 1.5 years though and turns positive and statistically significant after about 10.7 years in office.

expected to be replaced by their own party are not predicted to be replaced if their party is the median party (16% vs. 29% expected replacements). This is clear evidence in favor of the Intra-Party Median Party Hypothesis.

Overall, these results confirm several, yet, not all hypotheses with respect to PM party replacements. Taken together, these findings support the notion that MPs have an eye on both electoral prospects and inter-party politics when making decisions in intra-party politics. Yet, further research will be needed to more clearly spell out under what circumstances PMs are replaced by their own parties.

Conclusion and Outlook

This study extends research on intra-party competition, inter-party competition and government survival by developing a framework of prime ministerial survival. The theoretical arguments and empirical analyzes support the claim that political circumstances have different effects on whether the PM party or a rival party replaces the PM. These arguments and findings are highly relevant to understanding government behavior in parliamentary systems because they imply that in certain circumstances a PM may be at risk of falling due either rival party replacement, PM party replacement, or both.

There are multiple interesting research questions to address in future research. Many future studies will identify how *institutions* affect the survival of PMs. In this study, I show that that parliamentary majorities reduce rival party replacement risks. However, parliamentary institutions are likely to mitigate this effect as they, for instance, can shift the requirements the opposition has to overcome to replace the incumbent PM (Schleiter and Morgan-Jones, 2009). Similarly, I provide evidence that semi-presidential institutions may alter or mitigate the effect of certain parliamentary variables such as majority support (Elgie, 1999). Moreover, intra-party factors such as factions will be scrutinized (Ceron, 2012; Chambers, 2008).

Second, scholars will look into the *critical events* that trigger PM replacements (Browne, Frendreis, and Gleiber, 1984). Again, these may be rooted in intra-party politics, e.g.,

party leadership replacements (Andrews and Jackman, 2008; Ennser-Jedenastik, Schumacher, et al., 2015; Gruber et al., 2015; So, forthcoming). At the same time, they may be related to economic developments (Bueno de Mesquita et al., 2003; Flores and Smith, 2013; Licht, 2010), war and terror (Bueno De Mesquita and Siverson, 1995; Gassebner, Jong-A-Pin, and Mierau, 2011; Williams, Koch, and Smith, 2013), and many more.

Third, additional research will examine the *strategies* PMs use to minimize both replacement risks at the same time. This study's results imply that positive election results are certainly relevant in this context, however, they can also backfire by allowing intra-party conflict to be voiced. PM behavior at party conferences and the strategic selection of party staff (Quiroz Flores and Smith, 2011) are likely to address the intra-party threats I discuss here, and future research will analyze under what conditions PMs have to make hard choices to stay in office (Müller and Strøm, 1999). Related to this point are also leaders' rhetoric style and leadership style (Greenstein, 2012).

Finally, future research will investigate the *consequences* of the dual struggle for political survival for political outcomes such as the representation of citizens by political parties. For instance, as intra-party politics becomes more relevant to PM survival, the central arena of political contest for the political top job shifts from the parliament to the party headquarters, giving party members a privileged channel to affect government outcomes (Pilet and Cross, 2014). Such privilege of parties is widely criticized (e.g., Teorell, 1999; Müller, 2000, p. 311).

In a broader perspective, the findings imply that PMs differ in the extent to which they face intra-party and inter-party threats. In combination with the presidentialization of politics (Poguntke and Webb, 2007), it is likely that different PMs differ in their leeway to deviate from the party line or the coalition agreement without putting their office at risk. Particularly in times of rapid change such as financial crises, steep increases in migration, or Brexit, some PMs should have more options on the table to choose from without risking political survival. In turn, these PMs should be able to make more effective policies to the benefit of their citizens.

Finally, the results shed a new light on intra-party politics and its interactions with

inter-party politics. I present theoretical arguments and empirical support for claim that MPs do not replace their PMs when they are at high risk of rival party replacement. This finding supports the notion of parties as coalitions of politicians with rather similar policy preferences that face a constant trade-off between breaking away to express their true preferences and staying put to exploit party benefits (Aldrich, 1995; Dewan and Squintani, 2016).

References

Ahlquist, John S and Margaret Levi (2011). "Leadership: What it means, what it does, and what we want to know about it". *Annual Review of Political Science* 14, 1–24.

Aldrich, John H (1995). *Why parties?: The origin and transformation of political parties in America*. Chicago: University of Chicago Press.

Andrews, Josephine T and Robert W Jackman (2008). "If winning isn't everything, why do they keep score? Consequences of electoral performance for party leaders". *British Journal of Political Science* 38.4, 657–675.

Bäck, Hanna, Marc Debus, and Wolfgang C Müller (2016). "Intra-party diversity and ministerial selection in coalition governments". *Public choice* 166.3-4, 355–378.

Bäck, Hanna and Patrick Dumont (2008). "Making the first move". *Public Choice* 135.3, 353–373.

Bennister, Mark and Tim Heppell (2016). "Comparing the dynamics of party leadership survival in Britain and Australia: Brown, Rudd and Gillard". *Government and Opposition* 51.1, 134–159.

Box-Steffensmeier, Janet M and Bradford S Jones (2004). *Event history modeling: A guide for social scientists*. Cambridge: Cambridge University Press.

Browne, Eric C, John P Frendreis, and Dennis W Gleiber (1984). "An 'events' approach to the problem of cabinet stability". *Comparative Political Studies* 17.2, 167–197.

Bueno De Mesquita, Bruce and Randolph M Siverson (1995). "War and the survival of political leaders: A comparative study of regime types and political accountability". *American Political Science Review* 89.4, 841–855.

Bueno De Mesquita, Bruce and Alastair Smith (2010). "Leader survival, revolutions, and the nature of government finance". *American Journal of Political Science* 54.4, 936–950.

Bueno de Mesquita, Bruce et al. (2003). *The Logic of Political Survival*. London: The MIT Press.

Bynander, Fredrik and Paul 't Hart (2006). "When Power Changes Hands: The Political Psychology of Leadership Succession in Democracies". *Political Psychology* 27.5, 707–730.

— (2008). "The Art of Handing Over: (Mis)Managing Party Leadership Successions". *Government and Opposition* 43.3, 385–404.

Ceron, Andrea (2012). "Bounded oligarchy: How and when factions constrain leaders in party position-taking". *Electoral Studies* 31.4, 689–701.

Chambers, Paul (2008). "Factions, Parties and the Durability of Parliaments, Coalitions and Cabinets. The Case of Thailand (1979–2001)". *Party Politics* 14.3, 299–323.

Clarke, Harold D, Karl Ho, and Marianne C Stewart (2000). "Major's lesser (not minor) effects: prime ministerial approval and governing party support in Britain since 1979". *Electoral Studies* 19.2-3, 255–273.

Cross, William P and André Blais (2012). *Politics at the centre: the selection and removal of party leaders in the Anglo parliamentary democracies*. Oxford: Oxford University Press.

Denemark, David (2000). "Partisan Pork Barrel in Parliamentary Systems: Australian Constiuency-Level Grants". *The Journal of Politics* 62.3, 896–915.

Dewan, Torun and Francesco Squintani (2016). "In defense of factions". *American Journal of Political Science* 60.4, 860–881.

Diermeier, Daniel and Randolph T Stevenson (1999). "Cabinet survival and competing risks". *American Journal of Political Science* 43.4, 1051–1068.

Dodd, Lawrence C (1976). *Coalitions in parliamentary government*. eng. Princeton, NJ: Princeton University Press.

Döring, Holger and Philip Manow (2016). *ParlGov 2015 Release*.

Elgie, Robert (1999). *Semi-presidentialism in Europe*. Oxford: Oxford Univ. Press.

Elmelund-Præstekær, Christian, David Nicolas Hopmann, and Asbjørn Sonne Nørgaard (2011). "Does mediatization change MP-media interaction and MP attitudes toward the media? Evidence from a longitudinal study of Danish MPs". *The International Journal of Press/Politics* 16.3, 382–403.

Ennser-Jedenastik, Laurenz, Gijs Schumacher, et al. (2015). "Why Some Leaders Die Hard (and Others Don't): Party Goals, Party Institutions, and How They Interact". *The Politics of Party Leadership: A Cross-National Perspective*, 128–148.

Feenstra, Robert C, Robert Inklaar, and Marcel P Timmer (2015). "The next generation of the Penn World Table". *American Economic Review* 105.10, 3150–82.

Fish, M Steven and Matthew Kroenig (2009). *The handbook of national legislatures: a global survey*. Cambrdige: Cambridge University Press.

Fisher, Stephen D (2008). "United Kingdom". *European Journal of Political Research* 47.7, 1156–1164.

Flores, Alejandro Quiroz and Alastair Smith (2013). "Leader survival and natural disasters". *British Journal of Political Science* 43.4, 821–843.

Gamson, William A and Norman A Scotch (1964). "Scapegoating in Baseball". *American Journal of Sociology* 70.1, 69–72.

Gandhi, Jennifer and Adam Przeworski (2007). "Authoritarian Institutions and the Survival of Autocrats". *Comparative Political Studies* 40.11, 1279–1301.

Gassebner, Martin, Richard Jong-A-Pin, and Jochen O Mierau (2011). "Terrorism and cabinet duration". *International Economic Review* 52.4, 1253–1270.

Glasgow, Garrett, Matt Golder, and Sona N Golder (2011). "Who Wins? Determining the Party of the Prime Minister". *American Journal of Political Science* 55.4, 937–954.

Grambsch, Patricia M and Terry M Therneau (1994). "Proportional hazards tests and diagnostics based on weighted residuals". *Biometrika* 81.3, 515–526.

Green-Pedersen, Christoffer, Peter B Mortensen, and Gunnar Thesen (2017). "The Incumbency Bonus Revisited: Causes and Consequences of Media Dominance". *British Journal of Political Science* 47.1, 131–148.

Greene, Zachary D and Matthias Haber (2015). "The consequences of appearing divided: An analysis of party evaluations and vote choice". *Electoral Studies* 37, 15–27.

Greenstein, Fred I (2012). *The presidential difference: Leadership style from FDR to Barack Obama*. Princeton University Press.

Grose, Christian R and Antoine Yoshinaka (2003). "The electoral consequences of party switching by incumbent Members of Congress, 1947–2000". *Legislative Studies Quarterly* 28.1, 55–75.

Grotz, Florian and Till Weber (2017). "Prime Ministerial Tenure in Central and Eastern Europe: The Role of Party Leadership and Cabinet Experience". In: *Parties, Governments and Elites*. Springer, pp. 229–248.

Gruber, Oliver et al. (2015). "The End of the Affair. A Comparative Study of How Party Leadership Terms End". *The Politics of Party Leadership: A Cross-National Perspective*, 107–127.

Hazan, Reuven Y (1996). "Presidential parliamentarism: Direct popular election of the Prime Minister, Israel's new electoral and political system". *Electoral Studies* 15.1, 21–37.

Horiuchi, Yusaku, Matthew Laing, and Paul 't Hart (2015). "Hard acts to follow: Predecessor effects on party leader survival". *Party Politics* 21.3, 357–366.

Indridason, Indridi H and Christopher Kam (2008). "Cabinet reshuffles and ministerial drift". *British Journal of Political Science* 38.4, 621–656.

Isaksson, Guy-Erik (2005). "From election to government: Principal rules and deviant cases". *Government and Opposition* 40.3, 329–357.

Kalbfleisch, John D and Ross L Prentice (2002). *The statistical analysis of failure time data*. eng. 2. ed. Wiley series in probability and statistics. Hoboken, N.J.: Wiley-Interscience.

Kam, Christopher and Indridi Indridason (2005). "The timing of cabinet reshuffles in five Westminster parliamentary systems". *Legislative Studies Quarterly* 30.3, 327–363.

Kam, Cindy D and Elizabeth J Zechmeister (2013). "Name recognition and candidate support". *American Journal of Political Science* 57.4, 971–986.

Kang, Shin-Goo (2009). "The influence of presidential heads of state on government formation in European democracies: Empirical evidence". *European Journal of Political Research* 48.4, 543–572.

Kayser, Mark A (2005). "Who surfs, who manipulates? The determinants of opportunistic election timing and electorally motivated economic intervention". *American Political Science Review* 99.1, 17–27.

Laver, Michael (1998). "Models of government formation". *Annual Review of Political Science* 1.1, 1–25.

— (2003). "Government termination". *Annual Review of Political Science* 6.1, 23–40.

Laver, Michael and Norman Schofield (1998). *Multiparty government: The politics of coalition in Europe*. University of Michigan Press.

Lewis-Beck, Michael S and Mary Stegmaier (2007). "Economic models of voting". In: *The Oxford handbook of political behavior*. Oxford: Oxford University Press.

Licht, Amanda A (2010). "Coming into money: The impact of foreign aid on leader survival". *Journal of Conflict Resolution* 54.1, 58–87.

Lupia, Arthur and Kaare Strøm (1995). "Coalition Termination and the Strategic Timing of Parliamentary Elections". *American Political Science Review* 89.3, 648–665.

Mainwaring, Scott and Matthew Soberg Shugart (1997). *Presidentialism and democracy in Latin America*. Cambridge: Cambridge University Press.

Majone, Giandomenico (1998). "Europe's 'democratic deficit': The question of standards". *European law journal* 4.1, 5–28.

Martin, Lanny W and Randolph T Stevenson (2001). "Government formation in parliamentary democracies". *American Journal of Political Science* 45.1, 33–50.

Mattila, Mikko and Tapio Raunio (2004). "Does winning pay? Electoral success and government formation in 15 West European countries". *European Journal of Political Research* 43.2, 263–285.

Moravcsik, Andrew (2002). "Reassessing legitimacy in the European Union". *JCMS: journal of common market studies* 40.4, 603–624.

Müller, Wolfgang C (2000). "Political Parties in parliamnetary democrcies: Making delegation and accountability work". *European Journal of Political Research* 37, 309–333.

Müller, Wolfgang C. (2003). "Austria: Tight Coalitions and Stable Government". In: *Coalition Governments in Western Europe*. Ed. by Wolfgang C. Müller and Kaare Strøm. Oxford: Oxford University Press, pp. 86–125.

Müller, Wolfgang C and Kaare Strøm (1999). *Policy, office, or votes?: how political parties in Western Europe make hard decisions*. Cambridge University Press.

— (2003). *Coalition governments in western Europe*. Oxford: Oxford University Press.

O'brien, Diana Z and Yael Shomer (2013). "A Cross-National Analysis of Party Switching". *Legislative Studies Quarterly* 38.1, 111–141.

Pedersen, Helene H and Gijs Schumacher (2015). "Do Leadership Changes Improve Electoral Performance?" *The Politics of Party Leadership: A Cross-National Perspective*, 149–64.

Peleg, Bazalel (1981). "Coalition formation in simple games with dominant players". *International Journal of Game Theory* 10.1, 11–33.

Pilet, Jean-Benôit and William Cross (2014). *The selection of political party leaders in contemporary parliamentary democracies: a comparative study*. London: Routledge.

Poguntke, Thomas and Paul Webb (2007). *The Presidentialization of Politics. A Comparative Study of Modern Democracies*. Oxford: Oxford University Press.

Quiroz Flores, Alejandro and Alastair Smith (2011). "Leader survival and cabinet change". *Economics & Politics* 23.3, 345–366.

Schleiter, Petra and Edward Morgan-Jones (2009). "Constitutional power and competing risks: monarchs, presidents, prime ministers, and the termination of East and West European cabinets". *American Political Science Review* 103.3, 496–512.

Schoenbach, Klaus, Jan Ridder, and Edmund Lauf (2001). "Politicians on TV news: Getting attention in Dutch and German election campaigns". *European Journal of Political Research* 39.4, 519–531.

Schofield, Norman (1993). "Political competition and multiparty coalition governments". *European Journal of Political Research* 23, 1–33.

Semetko, Holli A (1996). "Political balance on television: Campaigns in the United States, Britain, and Germany". *Harvard International Journal of Press/Politics* 1.1, 51–71.

Siaroff, Alan (2003). "Comparative presidencies: The inadequacy of the presidential, semi-presidential and parliamentary distinction". *European journal of political research* 42.3, 287–312.

Smith, Alastair (2004). *Election timing*. Cambridge: Cambridge University Press.

So, Florence (forthcoming). "More spotlight, more problems? Westminster parliamentary systems and leadership replacement in large opposition parties". *Party Politics*.

Somer-Topcu, Zeynep (2017). "Agree or disagree: How do party leader changes affect the distribution of voters' perceptions". *Party Politics* 23.1, 66–75.

Strøm, Kaare and Stephen M Swindle (2002). "Strategic parliamentary dissolution". *American Political Science Review* 96.3, 575–591.

Tavits, Margit (2008). "The role of parties' past behavior in coalition formation". *American Political Science Review* 102.4, 495–507.

Teorell, Jan (1999). "A deliberative defence of intra-party democracy". *Party politics* 5.3, 363–382.

Volkens, Andrea et al. (2017). *The Manifesto Data Collection. Manifesto Project. Version 2017b*. Berlin.

Warwick, Paul V (1994). *Gocernment Survival in Parliamentary Democracies*. Cambridge: Cambridge University Press.

— (2012). "Dissolvers, disputers, and defectors: the terminators of parliamentary governments". *European Political Science Review* 4.2, 263–281.

Warwick, Paul V and James N Druckman (2006). "The portfolio allocation paradox: An investigation into the nature of a very strong but puzzling relationship". *European Journal of Political Research* 45.4, 635–665.

Whitaker, Richard (Dec. 2011). "United Kingdom: united kingdom". *European Journal of Political Research* 50.7, 1164–1174.

Williams, Laron K, Michael T Koch, and Jason M Smith (2013). "The political consequences of terrorism: Terror events, casualties, and government duration". *International Studies Perspectives* 14.3, 343–361.

Supplementary Material: Sensitivity Analyses

I test the robustness of the empirical results in the paper by controlling for country-specific heterogeneity in PM survival times and using a dataset on clearly parliamentary countries only, and a second dataset on Eastern Europe.

Country-Specific Heterogeneity

To ensure that unobserved country factors do not bias results, I re-estimate the empirical models. In models 1 and 4 of Table SM1, I add country-specific shared gamma frailty terms that capture such heterogeneity effects (Box-Steffensmeier and Jones, 2004, pp. 146–148). Comparing the results with and without frailty terms show only very little changes. In the rival party replacement model, the effect of PM party seat share in government becomes stronger indicating that PM seat share and government party seat share are both relevant for rival party replacement hazards. There are some more changes in the same party replacement model. Here, the effect of [PM: Age] on the replacement hazards is no longer statistically significant, yet, its impact was limited in the baseline model too.

Overall, the hypotheses that found convincing empirical support in the baseline models, find very similar support in the models with country-specific shared frailty terms. I am, therefore, confident that the conclusions are not biased by country-specific heterogeneity which is not directly captured by the baseline models.

Table SM1. Sensitivity Analyses

	Rival Party Replacement			PM Party Replacement		
	Country Frailty	Parliamentary Only	Eastern Europe	Country Frailty	Parliamentary Only	Eastern Europe
	(1)	(2)	(3)	(4)	(5)	(6)
[Government: Majority]	−1.386	−0.754	−0.350	−0.654	−0.438	−0.590
	(0.277)	(0.309)	(0.656)	(0.330)	(0.300)	(0.701)
[PM Party: Majority]	−1.526	−1.307	0.831	0.054	−0.416	−0.793
	(0.774)	(0.779)	(1.208)	(0.436)	(0.373)	(1.208)
[Government: Seat Share]	−0.020	−0.037	−0.073			
	(0.010)	(0.013)	(0.019)			
[PM Party: Seat Share]	−0.025	0.015	0.019			
	(0.011)	(0.012)	(0.028)			
[PM Party: Largest Party]	−1.745	−1.205	−2.056	1.936	1.560	1.047
	(0.239)	(1.362)	(0.666)	(0.739)	(0.733)	(1.181)
log(Time) × [PM Party: Largest Party]		−0.130				
		(0.195)				
[PM Party: Median Party]	−0.650	−0.619	−0.496	4.458	7.375	0.838
	(0.204)	(0.241)	(0.462)	(2.204)	(3.096)	(0.637)
log(Time) × [PM Party: Median Party]				−0.621	−0.942	
				(0.315)	(0.437)	
[PM Party: Seat Share Change]				0.022	−0.065	0.005
				(0.119)	(0.016)	(0.034)
log(Time) × [PM Party: Seat Share Change]				−0.012		
				(0.017)		
[GDP Growth]				0.041	0.056	0.025
				(0.043)	(0.041)	(0.076)
[PM: Age]				−0.080	−0.174	−0.027
				(0.093)	(0.100)	(0.050)
log(Time) × [PM: Age]				0.014	0.028	
				(0.014)	(0.015)	
PMs at Risk	300	215	70	300	215	70
Events	169	113	43	76	61	14

PM spell clustered standard errors in parantheses

Excluding Semi-Presidential Countries

In semi-presidentialism, both the PM and a fixed-term president are collectively responsible to the legislature (Elgie, 1999, p. 13). Even though the president may have limited impact on government formation (Siaroff, 2003), the joint responsibility of PM and president may alter the political arithmetic that governs PM replacements. To rule out that the effects and conclusions reported are an artifact of the semi-presidential countries in the sample, I re-estimate the empirical models after removing Austria, Finland, Iceland, Ireland, and Portugal from the sample. In total, I exclude 85 PM spells (28%). The results are shown in Models 2 and 5 of Table SM1.

Overall, the results are very similar to the baseline models in Table 1. In the rival party replacement model, the coefficient on the [PM Party: Majority] variable is still negative and similar in size, yet, not statistically significant. The joint effect on the [PM: Age] and the [log(Time) $\times$ PM: Age] variables shares this fate in the same party replacement models. Interestingly, the coefficient on the [Government: Majority] variable is only half as strong as in the baseline model and far from statistical significance. While this finding is not conclusive evidence, it hints at differences between the mechanisms that apply in parliamentary democracies and semi-presidential democracies. Nevertheless, this finding does not support the Intra-Party Government Majority Hypothesis either.

In total, I conclude that there is suggestive evidence that there are somewhat other mechanisms at work in parliamentary democracies and semi-presidential democracies. By and large, the hypotheses are supported by the results based on data from parliamentary democracies just as well as when semi-presidential systems are included.

Eastern Europe

While the hypotheses should find confirmation with data from any parliamentary democracy, there are factors that may distort the application to Eastern Europe. Particularly in the 1990s, Eastern European party systems were far from consolidated (Tavits, 2008a,b). For instance, many parties failed to secure representation in parliaments in two consecutive elections. The high rate of party mergers and party fission causes not only problems

to code when a PM replacement is actually a same party replacement even though the two parties have different names. What is more, in an environment of unstable parties, MPs may have a different calculus of what political constellations trigger rival party or MP party replacements (Grotz and Weber, 2012; Tzelgov, 2011). Moreover, many Eastern European democracies have a semi-presidential constitution.[1] I, thus, also test the hypotheses with a dataset on Eastern European PMs.

In total, I collect data from the same sources as the main dataset on 70 Eastern European PMs from 11 countries[2] in the time span 1990-2014. Summary statistics are depicted in Table SM3 and cases included are shown in Figure SM2. The results are presented in Models 3 and 6 in Table SM1.

Overall, the results indicate that effects are similar in Eastern Europe and the rest of the universe of parliamentary democracies.[3] Yet, effects are often weaker and statistically insignificant which is also rooted in the lower number of observations. Even though I have to leave to future research to establish whether the observed differences between Eastern Europe and the more established democracies are an artifact of the lower number of cases or due to substantive differences, I, conclude that the theoretical arguments cover Eastern European reality—at least partially—too.

[1]Here, these are seven out of the eleven Eastern European. These are Bulgaria, Croatia, Lithuania, Poland, Romania, Slovenia, and Slovakia. As before, the phases of strong Presidential influence on government formation are not included in the dataset (Siaroff, 2003).

[2]These are Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia and, Slovenia.

[3]A slight exception is the coefficient on the [PM Party: Majority] variable in the rival party replacement model which is strongly positive, yet, very far from statistical significance. As this finding runs counter any theoretical and empirical findings of recent decades, I suspect that they are an artifact of the low number of cases available to estimate this model.

Table SM2. Summary Statistics Daily Data

Statistic	N	Mean	St. Dev.	Min	Max
[PM Party: Median Party]	417,884	0.603	0.489	0	1
[PM Party: Largest Party]	417,884	0.847	0.360	0	1
[PM Party: Majority]	417,884	0.244	0.429	0	1
[PM Party: Seat Share]	417,884	0.413	0.123	0.007	0.785
[PM Party: Change Seat Share]	417,884	0.024	0.081	−0.566	0.383
[Government: Majority]	417,884	0.735	0.441	0	1
[Government: Seat Share]	417,884	0.557	0.112	0.007	0.964
[GDP Growth]	417,884	3.215	3.091	−9.132	30.122
[PM: Age]	417,884	56.409	8.368	36	87

Statistic	N	Mean	St. Dev.	Min	Max
[Rival Party Replacement]	300	0.563	0.497	0	1
[Same Party Replacement]	300	0.253	0.436	0	1
[PM Spell Duration (Days)]	300	1,475.030	1,288.940	22	7,634

Figure SM1. Summary of Time Periods Covered and PM Replacement Type

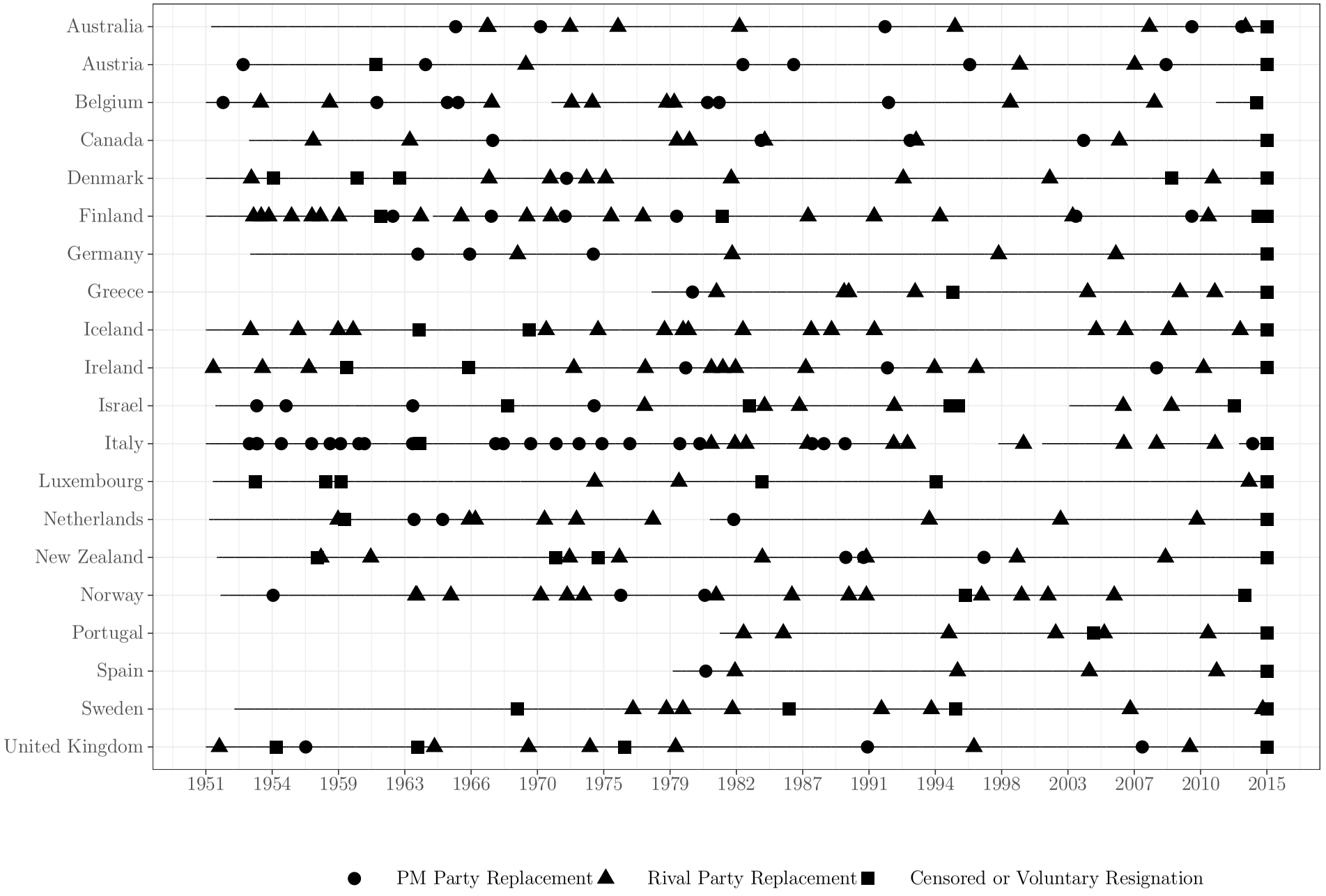
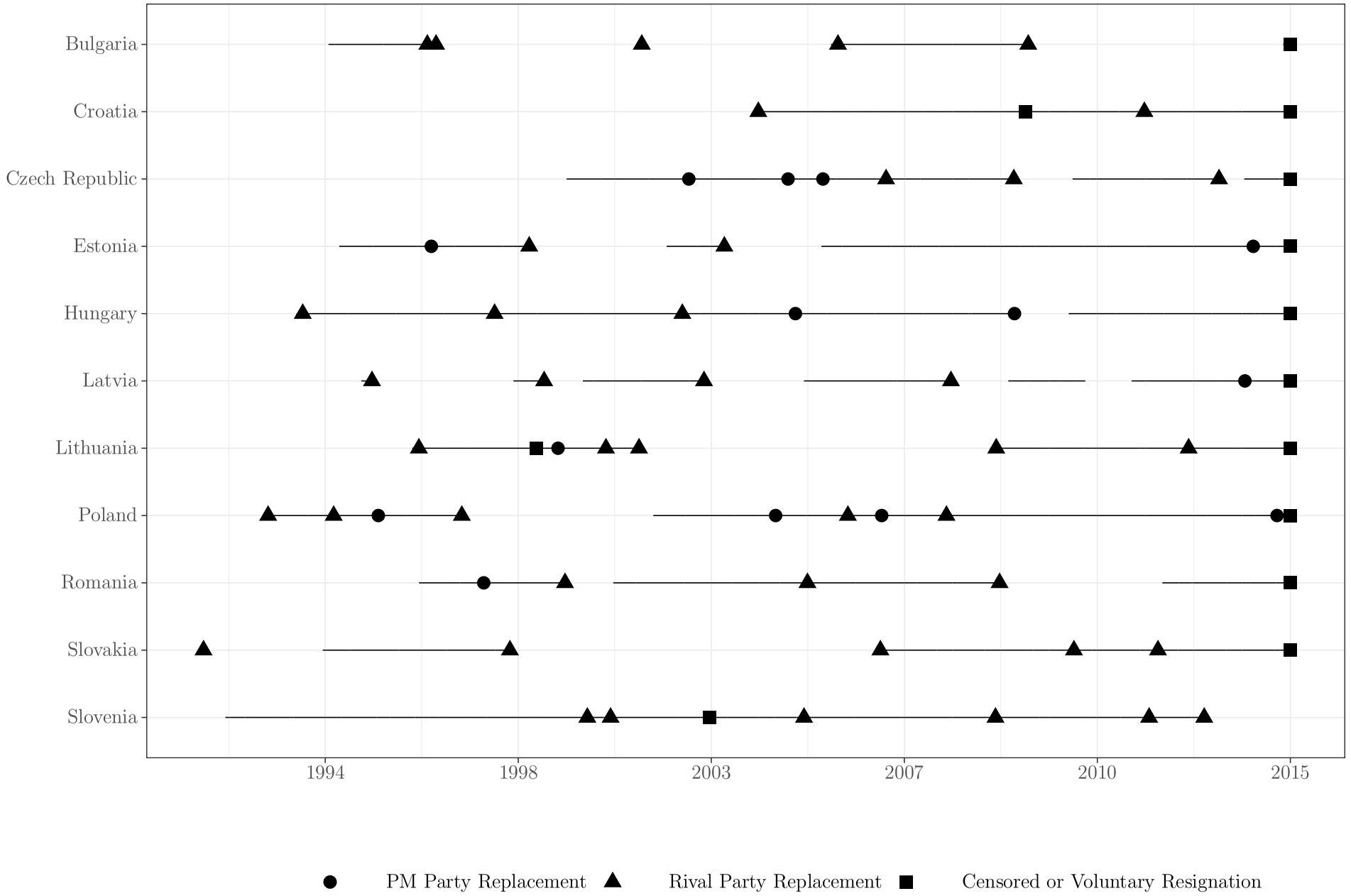


Table SM3. Summary Statistics Daily Data: Eastern Europe

Statistic	N	Mean	St. Dev.	Min	Max
[PM Party: Median Party]	55,238	0.428	0.495	0	1
[PM Party: Largest Party]	55,238	0.814	0.389	0	1
[PM Party: Majority]	55,238	0.113	0.316	0	1
[PM Party: Seat Share]	55,238	0.359	0.108	0.000	0.588
[PM Party: Change Seat Share]	55,238	0.098	0.127	−0.447	0.456
[Government: Majority]	55,238	0.738	0.440	0	1
[Government: Seat Share]	55,238	0.543	0.099	0.069	0.723
[GDP Growth]	55,238	3.163	4.359	−14.814	11.902
[PM: Age]	55,238	49.056	6.629	34	68

Statistic	N	Mean	St. Dev.	Min	Max
[Rival Party Replacement]	70	0.614	0.490	0	1
[Same Party Replacement]	70	0.200	0.403	0	1
[PM Spell Duration (Days)]	70	941.571	690.979	55	3,269

Figure SM2. Summary of Time Periods Covered and PM Replacement Type in Eastern Europe



References

Box-Steffensmeier, Janet M and Bradford S Jones (2004). *Event history modeling: A guide for social scientists*. Cambridge: Cambridge University Press.

Elgie, Robert (1999). *Semi-presidentialism in Europe*. Oxford: Oxford Univ. Press.

Grotz, Florian and Till Weber (2012). "Party systems and government stability in Central and Eastern Europe". *World Politics* 64.4, 699–740.

Siaroff, Alan (2003). "Comparative presidencies: The inadequacy of the presidential, semi-presidential and parliamentary distinction". *European journal of political research* 42.3, 287–312.

Tavits, Margit (2008a). "On the linkage between electoral volatility and party system instability in Central and Eastern Europe". *European Journal of Political Research* 47.5, 537–555.

— (2008b). "Party systems in the making: The emergence and success of new parties in new democracies". *British journal of political science* 38.1, 113–133.

Tzelgov, Eitan (2011). "Communist successor parties and government survival in Central Eastern Europe". *European Journal of Political Research* 50.4, 530–558.