

# Which Way Out?

## Additional Results

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# 1 Introduction

In this document I discuss in detail how domestic political variables as well as leader-specific factors affect the hazards of losing office. In addition, I discuss several robustness checks and the main variables used in the analyses.

## 2 Domestic Politics

I first consider how domestic political variables affect the differentiated risks of losing office. In that context, I begin by discussing two features of the research design: the frailty term and tests of the assumption of proportional hazards. First, the inclusion of the frailty parameter significantly improved the fit of the sub-models that examine the regular and irregular loss of office. In the sub-model on the regular loss of office, the countries with the largest estimated frailties are Latvia, Lithuania and France. Holding everything else constant, Latvian, Lithuanian and French leaders faced a baseline risk of losing office in a regular manner respectively about 3.2, 3 and 2.5 times larger than other leaders. The country with the lowest frailty term is the Yemen Arab Republic. All else equal, Yemeni leaders had only roughly one third the risk of a regular exit of other leaders. Other countries with factors not captured by the explanatory variables that affect their leaders' risk of losing office in a regular manner include Oman (its leaders have a 60% lower risk) and The Gambia (a 50% lower risk). US Presidents had a baseline risk only about 4% lower than the average leader. British Prime Ministers, finally, enjoy some advantages not captured by the explanatory variables, with a 20% lower risk of losing office in a regular manner than the average leader.

In the sub-model on the irregular loss of office, the countries with the highest frailty term are Bolivia and Argentina, whose leaders have a risk of losing office in an irregular manner twice as high as the average other leader. Leaders of Nigeria, Haiti, Ecuador and Syria have comparably high frailties. Leaders of Zimbabwe, Oman, North Korea, Finland and Senegal had the lowest frailties in this sub-model with a 45 – 50% smaller risk of losing office in an irregular manner. Factors specific to Oman thus endow its leaders with lower risks of both a regular and an irregular exit and as a result leaders of Oman survive longer in office than the average other leader. Finally, the explanatory variables do a relatively good job capturing the risks of an irregular exit for US Presidents and British Prime Ministers, whose risks are respectively .07% and 17% lower than those of the average leader.

Second, the global tests for non-proportionality indicate violations of the assumption of proportional effects in the pooled, regular exit and irregular exit models. Variable specific tests revealed that in the sub-model on the regular loss of office the variables for Mixed regime, Parliamentary democracy, Presidential democracy, Regime in Transition, Economic development (as measured by GDP per capita), Age at entry and the manner of Entry were responsible for this violation. In the sub-model on the irregular loss of office, the variables for Civil War and the manner of Entry violated the assumption of proportional effects. To address this problem, as suggested by Box-Steffensmeier, Reiter and Zorn (2003), I included a time interaction term for each variable that violated the assumption of proportional effects.<sup>1</sup> In the broadest terms, the inclusion of the time-interaction variables shows how political experience can help offset the negative effect of an irregular Entry, Age at entry, and a low GDP per capita on the hazard of a regular removal from office. Over time, thus, leaders may gain the political experience that

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<sup>1</sup>The models with no time interactions, upon which the non-proportional hazard tests were conducted, and the tests themselves will be made available in a Replication file on the author's website. I computed the significance levels for the  $\chi^2$  statistics in the non-proportional hazard tests using the approach of Li et al. (1991) to account for the use of multiple imputation.

allows them to turn some potential disadvantages to their advantage. However, these beneficial effects of political experience apparently affect each manner of losing office separately and differentially, since different time-interaction variables are needed in the sub-models (except for the one associated with Entry). In the case of economic Growth, the effects do not dissipate but instead become stronger over time in office.

The political institutions of different regime types have a significant and substantial effect on the risks of losing office. The competing risks estimates show that compared to Autocrats, leaders of Mixed and of Transitional regimes live in the worst of both worlds—at least initially: they face significantly greater risks of losing office in *both* a regular and an irregular manner. Compared to Autocrats, their increased risk of a regular removal from office dissipates over time, however, as a Mixed regime leader’s risk of a regular exit is no longer significantly different (at the 5% level) from Autocrats after slightly less than nine and a half years.<sup>2</sup> After almost 12 years in office, however, leaders of Mixed regimes become significantly less likely to lose office than Autocrats. For the first 11 years, leaders of Transitional regimes are significantly more likely to lose office than Autocrats; after 15 years, however, they become significantly less likely to lose office. Leaders of Parliamentary Democracies bear a significantly greater risk of losing office in regular manner but enjoy a significantly *lower* risk of losing office in an irregular manner than do Autocrats. While their increased risk of a regular exit dissipates over time, it would take more than a highly unusual eleven and a half years in office before leaders of Parliamentary Democracies enjoy statistically similar risks as do Autocrats. If they manage to stay in office for fifteen and a half years, they become less likely to lose office. As suggested by Linz (1994), the institutional arrangements of Parliamentary democracy thus appear to make it easier to replace bad governments, and bad leaders, through constitutional means. Compared to Autocrats, leaders of Presidential Democracies also face a greater risk of losing office in a regular manner which would take 11 years in office to dissipate. After more than 15 years in office, however, Democratic Presidents become less likely to lose office. Somewhat surprisingly perhaps, leaders of Presidential Democracies face a risk of losing office in an irregular manner not significantly different from that of Autocrats. Not surprisingly, perhaps, since Presidents typically enjoy longer fixed terms than Prime Ministers, Democratic Presidents enjoy a significantly lower hazard of a regular removal from office than do Democratic Prime Ministers. Presidential and Parliamentary Democratic leaders, however, face basically the same hazard of an irregular removal from office.<sup>3</sup>

Leaders who experience a civil war are unlikely to be removed from office in a regular manner. However, leaders in a civil war who have been in office longer than two months face a significant (at the 5% level) increased risk of an irregular removal from office. As such leaders have been or stay in office longer, the more significant this risk becomes. Hence, perhaps as a result of accumulated grievances or the duration of civil war, for leaders who are caught in a civil war, the risks of an irregular removal increase over time.

When we turn our attention to the economic variables some interesting patterns emerge. Surprisingly, perhaps, the effect of the level of economic development (as measured by GDP per capita) affects the overall probability of losing office through two distinctly different processes. In the first process, after about 1 year and 9 months in office, leaders of economically developed countries must contend with an increased risk of losing office in a regular manner (significant at the 10% level), but the significance quickly dissipates. In the second process, economic

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<sup>2</sup>Friedrich (1982) and Gill (2001) offer a clear overview of the interpretation of the interaction terms in regression models.

<sup>3</sup>For regular exit the difference has an associated p-value=.051; for irregular exit, the difference has a p-value=.576. For calculation of these significance levels, based on the generalization for multiple-imputed data sets of a Wald test for the null hypothesis that two coefficients are equal, against the alternative hypothesis that they are different, see Rubin and Schenker (1991).

development uniformly and consistently decreases the risk of an irregular removal from office. This finding nicely fits in with research in comparative politics on coups—one form of irregular removal—which has reached a consensus that economic development is an important predictor of coups (Belkin and Schofer, 2005). Londregan and Poole (1990, 151) showed that the risk of a coup tends to be highest in economically underdeveloped countries. The more economically developed a country, I find, the less likely are not just coups but all forms of irregular removal. Conflating these two opposite processes results in an insignificant coefficient in the pooled model. As noted earlier, the traditional focus on the overall hazard of losing office would not only miss these striking patterns, but would conclude that the level of economic development does not affect the hazard of losing office.

As one would expect, but contrary to earlier findings by Cheibub and Przeworski (1999), Economic growth (as measured by GDP Growth) decreases the hazards of both a regular and an irregular loss of office and therefore the overall hazard of losing office. (In the pooled model economic Growth significantly decreases the hazard after roughly one month in office.) Thus, leaders able to promote economic growth are rewarded with a longer tenure in office. Similarly, leaders of countries open to international trade also enjoy a longer tenure and a lower risk of both a regular and an irregular removal from office. Rodrik (1998) argued that the larger governmental role associated with trade openness provides some social insurance to external economic shocks. The findings here fit this line of argument in the sense that the institutions required to govern bigger, interventionist, governments and provide insurance against external economic shocks apparently also help channel and mediate political conflict through regular processes. Notably, leaders who open up their trade lower their hazard of an irregular removal from office as the coefficient on Changes in Trade Openness is negative and significant. Population size has contradictory effects on the risks of losing office. On the one hand, leaders of populous countries are more likely to lose office in a regular manner than are leaders of less populous countries, although this effect does not reach statistical significance. On the other hand, leaders of populous countries are significantly less likely to lose office in an irregular manner. It seems that the institutions required to govern a populous country successfully mediate conflict through regular removals from office.

### 3 Leader Characteristics

In this final section, I examine how the individual-level variables that measure the characteristics of leaders affect how they lose office. Not surprisingly, Age at entry initially increases the hazard of a regular loss of office. However, this effect dissipates after roughly two years, and reverses itself after three and a half years in office, at which point Age at entry decreases the hazard of a regular removal from office. Mature leaders who gain significant experience in office apparently have a significant advantage over their younger colleagues in dealing with the regular give and take of politics. In contrast, however, Age at entry monotonically increases the hazard of an irregular removal from office. In the pooled model, the findings from the two sub models average out to the effect that in the first two and a quarter years, Age at entry significantly increases the overall hazard of losing office. After half a year longer in office, however, Age at entry significantly decreases the overall hazard of losing office.

Political experience as measured by the number of Times a leader has previously been in office can be a double-edged sword. On the one hand, leaders who have served in office before enjoy a significantly lower hazard of a regular removal from office. On the other hand, such leaders must face an increased hazard of an irregular removal from office. In the pooled model we see that the first of these effects dominates and leaders who have served in office before enjoy a longer overall tenure. Previous political experience, it seems, can provide a leader with both

dedicated supporters and dedicated enemies.

The manner in which leaders gained power significantly affects the hazards of losing office. In roughly his or her first year in office, a leader who entered irregularly faces a significantly higher hazard of a regular removal from office. This effect reverses itself after slightly more than three years, at which point such a leader enjoys a significantly lower hazard of a regular removal from office. The dangerous effects of an irregular entry last longer when we consider the irregular removal from office. For about three years, leaders who entered irregularly face a significantly increased risk of an irregular removal from office. After five years in office, however, such leaders enjoy a significantly lower hazard of an irregular removal from office. The pooled model averages out these results so that in the first two years an irregular Entry into office significantly increases the overall hazard of losing office. If a leader manages to hold on to office for three and a third years, however, an irregular Entry is significantly associated with a reduced overall hazard of losing office.

## 4 Robustness Checks

As robustness checks, I estimated several additional models. First, I ran the models including variables for the presence of an election and the number of days since the last election.<sup>4</sup> I do not include elections in the Table 2 because of the potential for endogeneity. As I argued, elections can sometimes be postponed during war, or called because of and just after a successful international conflict. In these models elections and the number of days since the last election significantly increase the hazard of a regular removal, an effect that becomes stronger as the leader's time in office increases. On the other hand, elections and the number of days since the last election significantly *decrease* the hazard of an irregular removal from office. No conflict outcome has a significant effect on the regular removal from office. However, Challengers and Targets both enjoy a significantly lower hazard of a regular removal from office while Challenging, and Defeat in both crises and wars significantly affect the hazard of an irregular removal from office as in Table 2. Second, I include a variable measuring the duration of the polity, to capture regime institutionalization and stability.<sup>5</sup> I do not include this variable in Table 2 since the termination of a regime often is endogenous to an irregular removal from office. Irregular removals often spell the demise of one polity and the birth of another. Indeed, if leaders are overthrown, the explicit purpose often is to change the nature of the polity. In these models, the duration of the polity—as measured by the log of the number of days between the start of the polity and the beginning of the observation—increases the risk of an irregular removal but has no significant effect on the hazard of a regular removal or the overall hazard. In all three models the effects of regime type and conflict remain as in Table 2. However, economic development as measured by GDP per capita no longer significantly affects either hazard of losing office, most likely because well-established polities typically have built the institutions necessary for economic development.

Bueno de Mesquita and Siverson (1995) and others have argued that Democratic leaders are somehow better at picking their international conflicts. Specifically, Democratic leaders are supposedly able to pick conflicts least likely to bring unpleasant consequences. Unfortunately, it was not possible to interact regime type and conflict outcomes in the main model, since this results in too few observations, in particular for the irregular removal category. To nevertheless get a feel for how conflict affects different regimes, I estimated the models on regime type sub-

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<sup>4</sup>All these additional results are available on the author's website.

<sup>5</sup>I thank an anonymous reviewer for this suggestion.

samples.<sup>6</sup> For Autocracies, no conflict role or outcome significantly affected the Regular loss of office. However, Challenging and Victory in a crisis significantly decrease the hazard of an Irregular removal. Being a Target and Defeat in a war significantly increase the hazard of an irregular removal. For Mixed Regimes only Draws in a Crisis significantly decrease the hazard of a Regular removal. Challenging significantly decreases the hazard of an irregular removal (at the 10% level), while Defeat in war significantly increases the hazard of an irregular removal. For Democracies, finally, Victory in War significantly (at the 10%) level decreases the hazard of a regular removal. Since no Democratic leaders were removed irregularly after Victory or a Draw in war, I collapsed crises and wars into one international conflict category. In this model, Defeat significantly increases the hazard of an irregular removal, but none of the other conflict variables had a significant effect. While we can not assess whether conflict affected one regime type more than another, it is clear that Defeat in war has dangerous implications for each regime type. Even Democracies can not avoid the consequences of Defeat, casting additional doubt on selection effect arguments. Notably, conflict has little effect on the hazard of a Regular removal among all three regime types. The most notable differences between regimes is that Challenging pays for leaders of Autocratic and Mixed regimes, but not for Democratic leaders. This effect is probably due to the fact that military coups are unlikely in Democracies in the first place, hence Challenging does not fulfill the same function as it does in the other regime types. In other words, leaders of Autocratic and Mixed regimes seem to benefit from sending the military to fight, whereas Democratic leaders do not. Finally, to examine the potential for endogeneity, specifically to test if Challenging affects the Irregular removal from office or causality runs the other way, I ran a model that includes a dummy variable for the year prior to conflict initiation.<sup>7</sup> If this variable were to significantly reduce the hazard of an irregular removal, this would suggest the pre-existing security from an irregular removal causes challenges, rather than the other way around. However, this variable was not significant and did not affect the other main results. Note this test does not rule out other forms of potential endogeneity, in particular where leaders who anticipate an irregular removal Challenge in a *gamble for survival* as discussed above.

## 5 Appendix: Explanatory Variables

**Regime Type** Domestic regime type is measured with four dummy indicators that identify *Mixed regimes*, *Parliamentary democracies*, *Presidential democracies* and *Transitional Regimes*. *Autocracies* are the excluded baseline category. I code these dummy variables using the Polity IV's (2000) 21-point scale: countries scoring 7 or higher are coded as *Democracies*, countries scoring between -6 and 6 are coded as *Mixed regimes*. The residual category, then, includes the regimes scoring -7 or less, which can be labeled as *Autocracies* (Jagger and Gurr, 1995, 474). The regime scores for the countries experiencing periods of interregnum, or transition — i.e. those that are coded as -77 and -88 — are codes as *Transitional Regimes*. The cases of foreign interruption (Polity IV's score of -66) are excluded from the data set. In line with the coding rule developed by Chiozza and Goemans' (2003), I code all the leaders who experienced — or enacted — a regime change during their office tenure by attributing them the regime score they had for a longer period of time in the year of the regime transition.

I next distinguish between *Parliamentary* and *Presidential democracies* by a dummy variable indicator, taken from the ACLP data set of Przeworski et al. (2000) for the period 1950-1990, and recorded for the remaining periods from Cook and Paxton (1998),

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<sup>6</sup>I collapsed Parliamentary and Presidential Democracies into one category. There were too few observations for Transitional regimes and too many missing values for those observations to successfully run multiple imputations.

<sup>7</sup>I thank an anonymous reviewer for this suggestion.

Derbyshire and Derbyshire (1996) and the Encyclopedia Britannica. The ACLP category of *Mixed democracy* was folded into the *Presidential democracy* category because in these systems the president typically retains significant authority over foreign affairs.

**Economic Development** I measure economic development by the logarithm of the country's gross domestic product per capita. The raw data file with Historical Statistics—'horizontal-file.xls'—was downloaded from Maddison's web page: [www.ggd.net/maddison/](http://www.ggd.net/maddison/)

**Economic Growth** This variable measures the yearly change in the levels of GDP per capita. It is computed as the difference between the logarithm of GDP in year  $t$  and in year  $t - 1$ , multiplied by 100.

**Trade openness** I measure this variable using the level of total annual trade lagged by one year, and standardize it by using the level of GDP per capita in a country, where GDP serves as a proxy for a country's level of economic activity. I take the logarithm of the resulting quantity. Total trade is measured as the sum of the state's total imports plus total exports. Data are taken primarily from Barbieri (2002) for the periods until 1950, and from the International Monetary Fund's *International Financial Statistics* (available at [www.imf.org/external/pubind.htm](http://www.imf.org/external/pubind.htm)) for the years from 1950 onwards. I fill in missing values using the data in Gleditsch (2002) and in the World Bank's *World Development Indicators – WDI Online* (available at [devdata.worldbank.org/dataonline/](http://devdata.worldbank.org/dataonline/)).

**Change in trade openness** This variable measures the yearly change in the levels of trade openness. It is computed as the difference between the logarithm of trade openness in year  $t$  and in year  $t - 1$ , multiplied by 100.

**Population** This variable measures the logarithm of the total population in each country in any given year. Data are taken from the COW capability data set available in Bennett and Stam's (2000) *EUGene* (version 2.40), from Mitchell's (1998a,b,c) *International Historical Statistics*, and from the World Bank's *World Development Indicators – WDI Online* (available at [devdata.worldbank.org/dataonline/](http://devdata.worldbank.org/dataonline/)).

**Civil war** This is a dummy variable that takes on a value of 1 whenever a leader is in office during a civil war and 0 otherwise. Data are taken from the latest version of the COW Intra-State War data set from Sarkees (2000) for the years until 1946. For subsequent years, the data are taken from the PRIO data set on civil wars compiled by Gleditsch et al. (2002) (available at <http://new.prio.no/CSCW-Datasets/Data-on-Armed-Conflict/UppsalaPRIO-Armed-Conflicts-Dataset/>).

**Age** This variable measures leaders' age. Data are obtained from Bienen and van de Walle (1991), Lentz (1994, 1999), the [www.rulers.org](http://www.rulers.org) web page, the [www.worldstatesmen.org](http://www.worldstatesmen.org) web page, and Encyclopedia Britannica.

**Times in office** This is a count variable that measures the number of times a leader has previously ruled a country. It is set to 0 in the first spell in office.

**Entry** This is a dummy variable that measures how a leader entered office. It is coded 0 if the leader reached power through regular means, and 1 if the leader reached power against explicit rules and established conventions of the particular state. In my data, 394 leaders entered office irregularly as a result of domestic processes, while 15 leaders were directly imposed by another state for a total of 405 irregular entries. Documentation will be made available on the web.

**Conflict Involvement** The primary source for the conflict data is version 6.0 of the list of conflict events from the International Crisis Behavior (ICB) Project of Brecher and Wilkenfeld (1997) for the years from 1919 to 2003 (available at <http://www.cidcm.umd.edu/icb/>). Conflict involvement is measured by three dummy indicators that distinguish whether the leader participated as a challenger or a target in the conflict, or inherited the conflict from a predecessor. I also use the ICB four-point indicator for the severity of conflict to distinguish wars and crises: confrontations in which serious clashes, minor clashes, or no violence occurred are coded as crises, while full-scale wars are accordingly coded as wars.

**Conflict outcomes** Conflict outcomes are identified by three indicators that measure whether a given international confrontation ended in victory, defeat or draw, in line with Gelpi and Griesdorf's (2001) and the ICB's (2006) codings. The outcome of the conflict is measured in the last year it was waged and in the subsequent years until there is a leadership change. I use a hyperbolic transformation to discount the effects of conflict outcomes over time. Each of the three outcome variables is coded using the following time-dependent function:  $Outcome_t = 1/t$ , where  $t$  represents the number of years since the termination of the conflict. Thus, in the year the outcome is realized the outcome indicator — be that victory, defeat, or draw — is coded as 1, in the second year after the end of the conflict it is coded as .5, in the third year as .333, and so on. The conflict indicators are coded as 0 for all leaders who have not fought a conflict or who were removed before the conflict ended. This coding choice reflects the intuition that the effects of the outcomes of international conflict can well linger for a long time among voters or members of the ruling coalition, but that over time the importance of such conflict outcomes will dissipate.



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