

Institutions for Political Survival
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Abstract: This article extrapolates from theories of democracy and the literature on duration of political regimes to explain the institutional sources of leadership survival. These hypotheses are then tested using a data from the tenures of 2,296 leaders in 167 countries from 1869 to 2001. The analysis finds that measures of the level of democracy, coherence of institutions, the relationship to the military, government transition, and the legitimacy of succession have significant effects on the probability of leadership survival. Three findings are especially robust. As time in office increases, leaders in more competitive regimes, military regimes, and regimes with incoherent institutions have substantially less stability in office, even when controlling for numerous other internal and external factors. The results reveal a much more nuanced view of how these variables interact with time in office; an effect not anticipated in previous literature. Taken together, they provide a foundation for further studies on leadership survival, and suggest variables beyond just the presence/absence of democracy.

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Why do some leaders survive for long periods in office despite poor performance, while others are removed for relatively minor lapses? The systematic differences in tenure across countries and time suggest an institutional dimension to this question, but which institutions matter? As fundamental as these questions are for political science, large scale comparisons across countries and regime types have only emerged quite recently.¹

The lack of literature explaining leadership survival is surprising, given the well-developed literature on the effects of leadership tenure in almost every sub-discipline of political science. For comparative politics, political survival affects a number of actors, “including opposition parties, citizens, interest groups, revolutionaries, foreign governments and international organizations.”² In the study of international political economy, many theories of economic growth, public goods provision, and liberalization rely directly or indirectly on leadership tenure to explain the time horizons and incentives for policy-makers.³ In international relations, several studies connect leadership vulnerability to international conflict behavior.⁴

Of these subfields, international relations has done the most in trying to develop a baseline set of factors that affect leadership tenure,⁵ while the topic has generally been neglected by authors in the comparative subfield, where the literature has remained primarily focused on the stability of political regimes, executives in parliamentary democracies, or leadership survival in particular countries.⁶ Indeed, I have found only one study done in comparative politics that

¹ Laver and Shepsle 1998 reach a similar conclusion in their overview of the literature on the survival of executives in parliamentary governments; a topic that has received much more substantial attention.

² Laver and Shepsle 1998, 28-29; see also Bienen and Van De Walle 1991.

³ On economic growth, see McGuire and Olson 1996; Bueno de Mesquita et. al. 1999a; Bueno de Mesquita et. al. 2003a; and Barro 1997. On public goods provision, see Lake and Baum 2001; Bueno de Mesquita et. al. 2003a. On liberalization, see Przeworski 1991; Hellman 1998.

⁴ Fearon 1994; Bueno de Mesquita et. al. 1999b; Goemans 2000; Bueno de Mesquita et. al. 2003a; Chiozza and Goemans 2004; Colaresi 2004.

⁵ Bueno de Mesquita et. al. 1999a; Bueno de Mesquita et. al. 2003a; Chiozza and Goemans 2004; Colaresi 2004.

⁶ On political regime survival see ex. Gasiorowski 1995; Przeworski and Limongi 1997. On parliamentary executives see ex. Warwick 1994; King et. al. 1990. Examples of discussions in particular countries include Nathan 1998 on Malaysia; Snitwongse 1994 on Thailand; and Ahn 2002 on North Korea.

deals explicitly with leadership survival across country and regime-type boundaries.⁷ Case based studies, while important, have limited value in testing and developing cross-national theory. These shortcomings are apparent in the tendency for authors to focus on country-specific characteristics and leadership performance to predict the length of a leader's tenure.

Both the lack of attention given to leadership survival by comparativists and the lack of cross-pollination between the IR and comparative literature are troubling. Comparativists have developed a rich literature on both the characteristics of democratic competition and the survival of political regimes. Neither of these is unrelated to leadership survival, especially in the non-democratic context, where leadership and regime survival are strongly linked.

This paper attempts to bridge these literatures, demonstrating that variables in the comparative politics literature are very important for understanding leadership tenure. Drawing hypotheses both from comparative democratic theory and the literature on regime survival, it posits several hypotheses for testing. It then tests these hypotheses in event history models encompassing 2,295 leaders in 167 countries from 1869 to 2001. The results emphasize the importance of these variables in explaining the length of leadership tenure. They also show that the impact of these variables is much more nuanced over time than has previously been posited, even in the comparative politics literature.

Institutional Sources of Survival

The recent interest in leadership survival in international relations stems from attempts to explain the democratic peace theory,⁸ how war affects leadership survival, and how leaders choose to fight.⁹ Bueno de Mesquita and his co-authors have been especially vocal on the use of

⁷ Bienen and Van De Walle 1991.

⁸ Bueno de Mesquita et. al. 1999b; Bueno de Mesquita et. al. 2003a; Bueno de Mesquita 2007.

⁹ Goemans 2000; Chiozza and Goemans 2004; Colaresi 2004.

an institutional understanding of leadership tenure to explain long-standing theoretical shortcomings of democratic peace theory. They argue that a coherent explanation of the phenomena observed under the democratic peace rubric can be found by looking at an executive's vulnerability to losing office. Since democratic leaders are more likely to lose power if they are defeated in a conflict, they are less likely to start wars that they are unlikely to win and will try harder to win the wars they do fight. This makes them unattractive targets for autocrats or other democracies.

While this literature has made some substantial strides, it remains primarily focused on a few institutional characteristics. For example, Chiozza and Goemans focus on two institutional distinctions. First, they distinguish three general types of institutions: democratic, authoritarian and mixed. Mixed regimes, they argue, make leaders less stable, since they do not allow full participation, but they also do not have the repressive apparatus of their authoritarian counterparts.¹⁰ These characteristics, Goemans argues, also makes the leaders in mixed regimes more likely to face additional punishment if they lose office.¹¹ Within democracies, they draw a distinction between parliamentary and presidential systems. While they do find some evidence in favor of this distinction, both indicate greater likelihood of leadership removal, suggesting that the effect of democracy swamps the internal effect of parliamentarism.¹²

While lower levels of repression in mixed regimes provide the theoretical impetus for shorter tenures, none of these works discusses why repression is weaker in mixed states. One could just as easily argue that because mixed regimes allow for greater participation, they are in less need of a strong repressive apparatus to maintain power. Similarly, the authors give no institutional reason given for why oppression is lower in mixed regimes. The measure they use

¹⁰ Chiozza and Goemans 2004.

¹¹ Goemans 2000.

¹² See Chiozza and Goemans 2004, 609.

only accounts for institutional attributes of democracy and authoritarianism, not the level of civil liberties (eg., it includes the US as a full democracy well before the civil rights movement). As Bueno de Mesquita et. al. point out, repression itself calls out for an institutional explanation.¹³

A more nuanced institutional explanation is given by Bueno de Mesquita, Smith, Siverson and Morrow in a series of articles and a recent book.¹⁴ They argue that the size of two groups is important in determining the survival of leaders. The first group, the selectorate (*S*), consists of those who “have a government-granted say in the selection of leaders.”¹⁵ The second, the winning coalition (*W*) is “a subset of the selectorate of sufficient size such that the subset’s support endows the leadership with political power over the remainder of the selectorate as well as over the disenfranchised members of the society.”¹⁶ When a government consists of a small winning coalition and a large selectorate, being a member of the winning coalition is highly valuable, since a leader can easily replace an individual in the winning coalition, and being outside the winning coalition cuts the individual off from private distributions. Where both the selectorate and winning coalition are large, as in democracies, allocating private goods is difficult. Individuals can defect from the winning coalition without too much fear of a significant utility loss, since they will still derive benefit from the distribution of public goods. Thus, Bueno de Mesquita et. al. argue that leaders will expend the least resources and will be most stable in regimes with large selectorates and small winning coalitions.

Despite the elegance of what the authors label “selectorate theory,” it is certainly not exhaustive, nor is it exclusive of other institutional explanations. There are other characteristics of elections, barriers to organization, and institutional restrictions on tenure length which are not fully accounted for in the size of these two groups. In addition, the measures are empirically

¹³ Bueno de Mesquita et. al. 2003a, 32.

¹⁴ Bueno de Mesquita et. al. 1999a; 1999b; 2002; 2003a.

¹⁵ Bueno de Mesquita et. al. 2003a, 42.

¹⁶ Ibid., 51.

difficult to separate from measures of political competition, and do not perform consistently across non-democratic regimes.¹⁷

These first cuts at institutional explanations for leadership tenure have already yielded significant findings on both domestic and foreign policy behavior and they also demonstrate how porous the distinction between comparative politics and international relations has become. Yet the institutional distinctions that have been made, especially in the non-democratic context, remain either conceptually underdeveloped or have operational problems, and there has been little influence from the comparative politics literature on these models. In the next section I discuss several hypotheses that provide some additional insight into how institutions may shape leadership outcomes.

Regimes and Leadership Survival

While the comparative politics literature has not done much explicitly on leadership tenure, a rich literature exists on the survival of political regimes and on the important characteristics of political competition. The literature on political regime survival seems a logical place to look for hypotheses on leadership survival, since, especially in the non-democratic context, the fate of the leader and of the regime is intertwined. Similarly, the literature on the characteristics of political competition can provide a much firmer footing for understanding how these aspects of democracy affect the survival of leaders.

I will begin with the democracy literature. While the level of democracy is not a new variable in international relations, the manner in which it is addressed here is unique. Unlike previous studies, which implied normative characteristics of democracies as driving their international behavior (e.g. propensity to wage war),¹⁸ recent studies have focused more on the

¹⁷ Kennedy, 2007.

¹⁸ See ex. Maoz and Russett 1993.

effect democracy has on the probability of leadership removal. The increased likelihood of leadership removal in democracies makes leaders less likely to fight wars they might lose and to fight harder once in a war. This, in turn, makes them unattractive targets for other states who might otherwise initiate conflicts with them.¹⁹ In many ways, this builds on Riker's insight that the true value of democracy lies not in its ability to reflect popular will but in the ability to remove poorly performing leaders.²⁰

The characteristics of democracy that make said removal easier are usually simplified to a couple of dimensions. The conventional wisdom since Dahl's exposition of "polyarchy," however, has been that there are several dimensions to competitive politics and what is labeled as democracy.²¹ The most salient characteristic of democracies is regular, legally mandated elections in which the leader can be removed from office.²² This greatly reduces the cost of removal. Reminding the reader that ballots are cheaper than bullets may seem hyperbolic, but the higher obstacles to leadership replacement in less democratic/authoritarian regimes are well-known and significant. Zielinski's point about democratic transitions applies more generally to changing most leaders in non-democratic regimes: "A critical problem of transition is to get to democracy without being killed."²³ Elections, though, are not limited to fully democratic states. Some countries have restricted elections, where competition takes place, but the nominees are picked from or by a small elite. Others have competitive elections, but the ability to vote is restricted on the basis of gender, race, or landholding. Regardless of these restrictions, we would expect leadership tenure to be shorter when there is the regular ability to change leaders through

¹⁹ Bueno de Mesquita et. al. 1999b.

²⁰ Riker 1982.

²¹ Dahl 1989, 233.

²² Przeworski 1991; Przeworski et. al. 2000.

²³ Zielinski 1999, 213. Bueno de Mesquita et. al. 2003a, 32 discuss this repression cost, but also contend that it is not enough to explain differences, since this leaves the leadership's ability to repress unaccounted for. They contend, "Oppression is a byproduct of the political arrangements that ensure longevity." My point has less to do with high repression costs in relationship to executive survival, and more to do with the extremely low costs and regularity of opportunity in a democracy.

peaceful and lawful means.

A second aspect of democracy and leadership survival is in the organization of groups, particularly a durable and capable opposition. The ability to organize and associate, especially in political groups, makes the removal of leaders less costly and provides an enforcement mechanism for removal. Groups in more democratic states, especially opposition groups, are organized and capable of operating, increasing competition and choice. Civil liberties, which allow individuals to organize into political groups, ensure that individuals have both a choice between programs and a springboard for organizing political action. Leadership removal by lone individuals is not ordinarily possible, and those individuals in the best position to change the leader in non-democratic regimes, are usually also those who the leader ensures have the least incentive to do so. Along the lines of group formation, there are a number of important distinctions: whether the groups are stable, whether opposition groups are strong enough to compete, and how strong group divisions are. States that have regular, durable, and competitive political affiliations are thus more likely to have leadership turnover.

Additionally, terms limits are an almost exclusive characteristic of democratic regimes, with Mexico being a notable exception.²⁴ Term limits place an upper limit on the length of time leader can serve in office. In some less-than-full-democracies, term limits have been imposed and then abolished (ex. Uzbekistan and Turkmenistan), but even in states with less-than-fair competition, these term limits have been respected. Vladimir Putin's decision to step down as Russia's president is only one example of the normative, as opposed to the practical, power of term limits. Usually, however, the enforcement of term limits relies on the checks other institutions are effectively able to enforce on the executive. This is the third important dimension of political competition. Where other institutions have more effective checks on executive

²⁴ Bueno de Mesquita et. al. also note this relationship. See *ibid.*, 313.

power, leadership tenure would be expected to be shorter.

The key point to be taken away from this discussion is that democracy entails the institutional ability to remove leaders on a number of levels, not all of which will be present to the same degree in every country. This is why many authors have argued for looking at democracy in terms of levels, rather than as a category.²⁵ As the various fragments of government accountability which make up democracy enter into the system, leadership removal should be less costly, making it more likely during times of poor policy performance.²⁶

Several hypotheses for leadership tenure can be drawn for the literature on political regime survival. Eckstein and Gurr identify institutional coherence as an important stabilizing factor for governments.²⁷ Institutional coherence is usually defined by the combination of competitive and non-competitive (or alternatively democratic and authoritarian) characteristics in the same government structures. For example, a regime which has political competition but an unelected and unconstrained chief executive is considered incoherent, and is more likely to be unstable for a number of reasons. First, conflict over political goals is more likely, since politicians in different institutions represent different interests. In this example, political competition results in the development of social groups and a legislature representing the interests of and held accountable to popular opinion, but an executive who is not. Second, where different institutions of government have different bases of support, assuming that politicians are interested in gaining more power, they have an incentive to use their support to undermine the legitimacy of other institutions.

In the above example, an elected legislature may use its claim to represent the populace to

²⁵ See Dahl 1989; Bollen 1990; Bollen and Jackman 1989; Gurr, Jagers and Moore 1990.

²⁶ Sklaar argues that democracy is made up of various fragments, which are unlikely to all be adopted simultaneously, see Sklaar 1987.

²⁷ Eckstein 1969; Gurr 1974. Their argument primarily applies to regime stability, but the same logic should hold in discussions of leadership survival, especially in authoritarian regimes, where regime and leader are less separable.

undermine the executive's authority. For this reason, studies on the effect of legislatures in authoritarian regimes suggest that they erode rather than buttress the regime's legitimacy.²⁸ These tensions in the system also affect leader stability, since regime incoherence lays the foundation for opposition and produces institutions which have structural incentives to undermine the leader's basis of power. Thus, keeping constant the costs of removal inherent in non-democratic systems, leaders in incoherent regimes should be more likely to lose office. Coherence also provides an institutional explanation for Chiozza and Goemans' assertion of lower repression and higher punishment in mixed authoritarian/democratic regimes.²⁹ The different support-bases of institutions in these types of polities undermine the ability of leaders to exercise repression. Similarly, the existence of the competing institutions provides the institutional basis for punishment, without the cyclical nature of democratic power transfers.

Studies in comparative politics also give numerous reasons for expecting that military regimes are important for analysis. These studies suggest relatively short leadership tenure among military leaders. First, close relations with the military, especially after the individual leaves office, reduces the likelihood of retribution. This, in turn, reduces the costs of stepping down in authoritarian regimes, making a leader more likely to leave office. Second, military regimes often have very limited goals, such as preventing a left-wing party from coming to power or improving the pay and treatment of the military. In these cases, the regime usually defines itself as "transitory" and is justified as a "temporary suspension" of constitutional rules.³⁰ This emphasis on the short-term goals of military rule means that leaders in these regimes have limited legitimacy to support long tenures. Third, the lack of electoral or hereditary legitimacy makes them especially susceptible to loss of support when economic problems arise.³¹ Military

²⁸ Mishler and Hildreth 1984.

²⁹ Goemans 2000; Chiozza and Goemans 2004.

³⁰ Geddes 1999; Geddes 2002.

³¹ See ex. on Brazil, Markoff and Baretta 1990.

regimes are not completely separate from society, and often rely on support for powerful social factions to legitimate their rule. This reliance also makes vulnerable if they are unable to provide the social order or economic goods they have promised in exchange for the ability to rule. Finally, military regimes are not totally unified, and internal conflicts with domestic security forces make tenures more difficult.³² Military leaders face a tradeoff between the goal of a professional national military and the necessity of domestic repression. Tensions between a military that views itself as protecting the nation and the repressive apparatus necessary to protect the military's power reinforces the temporariness of military rule.

While most of these arguments are applied to the literature on regime survival, they have similar implications for the survival of leaders, since, with a few exceptions, military regimes and the leader of those regimes are strongly tied.³³ Thus, we would expect that leaders in military regimes will have shorter tenures than leaders in other authoritarian regimes. Interestingly, the comparative literature on military regimes diverges sharply from the expectations of Bueno de Mesquita et. al., who argue that military regimes should have smaller required winning coalitions, making them, all else being equal, more stable.³⁴

Institutional context is also important, namely whether the leader is serving under non-sovereign institutions, either because multiple centers of power are competing for control over the state or because the current government is in the process of handing power to another government. The Polity project, which identifies political regimes according to their institutional characteristics, identifies two such time periods: complete collapse of central authority (“interregnum”) and transitional phases between types of government (“transition”).³⁵ Under

³² Stepan 1988.

³³ Although it should be noted that, even where the military regime outlasts a single leader, as in Brazil, military leaders still have substantially shorter terms than personalistic or monarchical dictators.

³⁴ Bueno de Mesquita et. al., 1999a; 2003a.

³⁵ Polity also includes a code for times of foreign occupation, “interruption.” This is not included in the following analysis, since democracy scores are also undefined for these periods. See Marshall and Jagers 2002.

these conditions, leaders serve under institutions that are either temporary or are facing extreme challenges. Both of these factors should inhibit long leadership tenure.

Finally, legitimacy of succession should be accounted for. Legitimacy in electoral regimes emerges through obedience to legal rules. Non-democratic regimes may determine leadership through the vote of an elite group, rigged national elections, or hereditary succession. Organized methods of succession are important because they give the leader a justification for rule that transcends policy performance. That justification for rule can act as a reservoir of support when economic or government performance flounders.³⁶ Indeed, where the institutions for succession are not institutionalized, leaders will lose one of the primary bases for stability.³⁷ From this perspective, leaders who seize power through an unregulated process, or by force, are most in danger of losing office.

The above hypotheses, by incorporating domestic-level theory from comparative politics into the study of leadership tenure, provide a foundation for more nuanced comparison of how institutions affect leadership stability. In particular, offer a much more detailed distinction both among democratic regimes and in non-democratic regimes. This directly responds to the needs identified by some authors in international relations for a more sophisticated conception of non-democratic government.³⁸

Testing the Institutional Sources of Leader Survival

This section operationalizes and tests the hypotheses laid out above. Operationalizing the above concepts is relatively straightforward using several well-known databases. Table 1 gives a summary of these main variables and the hypotheses tested in this study. The overall dataset

³⁶ Weber 1947.

³⁷ Huntington 1968.

³⁸ Peceny, Beer and Sanchez-Terry 2002.

covers 2,296 leaders in 167 countries from 1869 to 2001.

The dependent variable, length of time in office, is measured using the Archigos dataset developed by Goemans, Gleditsch and Chiozza.³⁹ Time in office is counted on a yearly basis according to the recorded time of entry and exit from office. Failure is coded as the leader leaving or being forced to leave office. Consistent with current convention, those who died in office are coded as having their terms censored. Also censored are leaders whose terms took place before the country achieved independence, those whose terms were prior to the beginning of the dataset, and those whose terms were ongoing at the end of 2001.

A Cox proportional hazards model is used to analyze this data. This model has been the workhorse in studies of leadership survival, and has a number of advantages over parametric methods of event history analysis.⁴⁰ Most importantly, it estimates the baseline hazard of leadership failure from the data, instead of making a-priori assumptions about the shape of the relationship with time. This allows the Cox model to produce consistent and unbiased estimates under a wide variety of specifications.⁴¹ An additional modification to the Cox model utilized here is the test for non-proportional effects. Proportional hazard event history models assume that the marginal effect of a variable is consistent over time. This assumption, however, does not always hold. To make sure that the effect of variables does not change over time, this study will test for disproportionality and interact variables with the natural log of leader duration, $\ln(t)$, to yield a measure of the variable's effects over time.⁴² The statistics reported in the tables are hazard ratios, not standard regression coefficients. Hazard ratios have the advantage of easy interpretation. Values above 1 indicate the percent more likely to fail based on a one point

³⁹ Goemans, Gleditsch and Chiozza 2006. Available online at <http://mail.rochester.edu/~hgoemans/data.htm>.

⁴⁰ Three of the five recent studies of leadership duration utilize the Cox model, see Bienen and Van De Walle 1991; Bueno de Mesquita et. al. 1999a; Chiozza and Goemans 2004; Colaresi 2004.

⁴¹ For more on this, see Box-Steffensmeier and Jones 1997; 2004.

⁴² See Box-Steffensmeier and Zorn 2001; Box-Steffensmeier, Reiter and Zorn 2003.

increase in the independent variable. For example, a value of 1.234, indicates that a one point increase in the independent variable results in a 23.4 percent increase in the probability of failure in the next year of observation. Similarly, scores below 1 suggest a lower chance of failure. So a score of .766 would suggest that a one point increase in the independent variable makes a leader 24.4 percent less likely of losing office. Unless otherwise indicated, all models use robust clustered standard errors to account for non-independent errors due to country of leadership.

[Table 1 About Here]

The level of competitiveness of institutions, or alternatively the level of democracy in institutions, is measured using the country's combined Polity IV score.⁴³ This often used measure places countries on a scale from -10 to 10, with 10 representing the most democratic institutions. A continuous measure is chosen in line with the hypothesis laid out above, that more competitive systems should have increased turnover, even if they are not fully democratic. The Polity IV measure also has the advantage of covering the entire time-period being studied here.

Coherence is also measured using the Polity IV dataset. In this case, however, the scale of democratic and authoritarian characteristics is squared and then divided by 10. This results in a scale from 0 to 10, with a 0 indicating that the country's institutions are about half democratic and half authoritarian and a 10 indicating that they are fully democratic or authoritarian. Again, the decision for a continuous measure was made consistent with the theory of coherence, which predicts more coherent institutions will have more stable leadership.

Military regimes are coded using Banks' concept of regime type.⁴⁴ Countries are originally assigned a 1 if the government is civilian led, a 2 if the government is combined military/civilian and a 3 if the government is military. For simplicity, and consistent with the

⁴³ See Marshall and Jaggers, 2002.

⁴⁴ Banks, 1996.

hypothesis outlined above, this scale was simplified by assigning a 0 to those countries with a civilian government and a 1 to those which have military involvement.

Transition politics is coded using the Polity IV standardized authority codes. These codes assign a -77 to “interregnum periods” – times of anarchic or contested politics – and a -88 to “transition periods” – times when the government is undergoing a planned transition. Both of these are assigned a 1 when the government is undergoing one of these transition periods and a 0 otherwise.

Finally, self-selection is measured using Marshall and Jaggers’s classification from Polity IV. This codes those leaders who come to power through an unregulated succession process (i.e. through force) as being self selected.⁴⁵ Country years in which the leader comes to power in this unregulated fashion are assigned a 1, all other years are assigned a 0.

Table 2 gives the baseline results for this study. The global test for non-proportionality, based on Schoenfeld residuals, suggests that non-proportionality is a problem ($p < .002$). The correlation between the scaled Schoenfeld residuals and the logarithm of time indicated that the level of democracy, coherence, times of transition, and military regime measures were responsible for this violation. These variables do not have a fixed impact over time in office. For this reason, the interaction of these variables with the natural log of time was introduced into the model along with the standard measures.⁴⁶

Both the level of democracy and its interaction with time are statistically significant ($p < .003$ and $p < .046$) and both suggest that greater competitiveness makes leadership removal more likely. The hazard ratio for level of democracy indicates that a 1 point increase in Polity score results in a 5 percent greater chance of losing office. Coherence is also statistically significant ($p < .051$) and indicates that a 1 point increase in the ten point coherence scale makes a leader 4.6

⁴⁵ Marshall and Jaggers, 2002. In the Polity IV dataset this is coded $XRREG = 1$.

⁴⁶ For a discussion on options for time interactions see Box-Steffensmeier, Reiter and Zorn 2003, 44.

percent more likely to stay in office an additional year. If the leader self-selects into office, the results in Table 2 suggest this leader is 24.7 percent more likely to lose office ($p < .045$).

Transition politics has a slightly more complicated interpretation. The non-interacted variable for times of transition does not reach conventional levels of statistical significance, suggesting that there is no initial effect of these transitions on leadership survival. The interaction with time, however, is statistically significant ($p < .003$) and suggests that as time increases, the effect of the transition grows larger. Specifically, after approximately two and a half years, leaders in transitional governments are 40.3 percent more likely to lose office. Similarly, the indicator of military regimes has no distinguishable effect on the probability of a leader remaining in office, but its interaction with time does ($p < .001$). This suggests that being the leader of a military regime may not initially be disadvantageous, but after approximately two and a half years military involvement makes a leader 46.1 percent more likely to lose office.

[Table 2 About Here]

These results are generally consistent with the expectations from the previous section, and, in several cases, show a much more nuanced empirical picture than has previously been given, particularly with respect to the effect of variables over time. The results also stress the more general point, that variables from the comparative politics literature have a significant effect on the length of leadership tenure, providing a much clearer understanding of important institutional distinctions in both the democratic and non-democratic context. The test, however, does not control for the number of other factors that might influence leadership tenure, nor does it control for problems of country-level heterogeneity. This is done in the next section.

Robustness Tests

Table 3 puts the previous section's results through the proverbial ringer to find how

robust they are. Model 2 introduces several controls introduced to account for country-level characteristics that might influence leadership tenure: level of economic development, economic growth, trade openness, the growth in trade openness, population, and level of ethnic division. Two characteristics of the leaders themselves are also introduced, namely the age of the leader and the number of previous times in office. Variables indicating the presence of civil war, interstate war, and extra-state war are introduced to account for the effect of conflict on leadership tenure. Finally, two additional institutional characteristics are included, the size of the “winning coalition” and the size of “selectorate” in the leader’s political system. A summary of all these variables, along with their method of measurement, is provided in Appendix I.

Again, tests of the proportional hazard assumption indicate a significant level of non-proportionality in these variables ($p < .001$). Along with the non-proportional effects of the main institutional variables, outlined above, variable-level tests suggest that the level of economic development, size of population, age of leader, level of ethnic division, and size of selectorate all have effects that change over time. As such, the interaction of these variables with the natural log of time is also included in the Cox model.

Adding these controls does raise issues for some of the institutional variables, but reinforces the robustness of others. The standard measure of coherence is no longer statistically significant, but its interaction with time is. This suggests that coherence does not initially affect a leader’s tenure, but the longer the leader is in office the more incoherent institutions make the leader’s tenure more fragile. After two and a half years a one point increase in the coherence scale makes a leader 4.2 percent more likely to survive. Similarly, the indicators of military involvement in government are both statistically significant ($p < .032$ and $p < .001$), but the results change over time. Initially military involvement in government makes leaders more stable in office, about 35.4 percent more likely to keep office. Over time, though, military

involvement makes the leader more likely to lose office. After two and a half years, military involvement makes a leader about 59 percent more likely to lose office. Such a relationship makes sense, since military force gives the leader the repressive capability necessary to take and hold office, but not the legitimacy to stay in office for a long period of time. Three of the institutional variables, self-selection, times of transition and transition's interaction with time, fall well outside commonly accepted bounds of statistical significance. This suggests that their effect is swamped by the effect of the control variables. Finally, the effect of competitiveness remains statistically significant and still indicates that both initially and over time leaders in more democratic regimes are more likely to lose office.

[Table 3 About Here]

Model 3 takes the controls one step further. Since country-level heterogeneity is almost always an intuitive counter-hypothesis in comparative data on the state level, dummy variables for country are introduced, producing a fixed effects estimation.⁴⁷ Doing this generally reinforces the above findings, with a couple of exceptions. The coefficient for level of democracy drops, while its interaction with time strengthens. Both still show that greater competition results in higher fragility of leadership tenure. Coherence is statistically significant, and suggests that initially leaders in more coherent regimes are less stable, but after about two and a half years a one point increase on the coherence scale makes them 6.6 percent more likely to stay in office. Much like the military regime variable, this interaction makes some intuitive sense, since leaders in non-competitive regimes may initially have an advantage over those in democratic, but highly coherent, regimes. This advantage, however, is likely to fade over time, especially compared

⁴⁷ In the TSCS context see Wilson and Butler 2007. For the analogy between the event history and TSCS context see Beck, Katz and Tucker 1998. I have argued that this step, along with robust clustered standard errors, are necessary to test for heterogeneity and heteroscedasticity, since shared frailty models assume that the random covariate is not correlated with any other covariates, see Kennedy 2007. This assumption needs to be explicitly tested in any comparative framework.

with leaders in authoritarian, and highly coherent, regimes. The effect of military regimes over time is also stronger in this model, now suggesting that after about two and a half years leaders in military regimes are 64 percent more likely to lose office than their non-military counterparts.

Model 4 introduces a slightly different method for dealing with heterogeneity, a shared frailty model. Here the shared characteristics of the leaders' countries are modeled as a random covariate, drawn from a Gamma distribution, with mean 1 and variance Θ .⁴⁸ Here again, the main findings are durable and all of the statistically significant findings are strengthened compared to Model 2.

All three of these models suggest that at least some of these institutional findings are highly robust to alternative specification and models of unobserved heterogeneity based on the leader's country. The strongest conclusions are: (1) as leaders are in office for more time, more democratic institutions make them more likely to lose office; (2) as leaders are in office for more time, more coherent institutions make them more likely to stay in office; (3) while initially stabilizing, the involvement of the military in politics weakens leadership stability over time. These results are summarized in Figures 1 through 3. Figure 1 shows the effect of the interaction of Polity score and time at the 10th, 25th, 50th, 75th, and 90th percentile on the likelihood of surviving an additional year in office. The figure clearly shows that as time passes, those in more competitive regimes have much steeper survival slopes, indicating that they are more likely to lose office. Figure 2 shows the same percentiles for the interaction of coherence with time. This time, higher values of coherence with the time in office result in flatter survival curves, suggesting that leaders more likely to survive an additional year. Finally, figure 3, which looks at the effect of military regimes over time is perhaps the clearest. Since military regimes are coded as a dummy variable, all non-military regimes have a score of 0, and scores above 0 are

⁴⁸ For more on shared frailty models, see Box-Steffensmeier and Jones 2004, 142-148.

indicative of the interaction over time. Thus, the steeper curves for higher values of the variable clearly indicate that the effect of military regimes is time dependent. In this case, as time in office increases, the effect of military leadership increases.

[Figures 1, 2, and 3 About Here]

While the effects of the institutional variables outlined above are not proportional over time, the results still provide general support for the main hypotheses. Not only do the results reinforce the importance of the variables developed in the first section, but they also provide much greater detail about the relationship between these variables and the leader's time in office. The implications suggest both the importance of the comparative politics variables in the study of leadership survival and the importance of time in the future study of these variables in comparative politics. The next section will analyze these results further and suggest what it means for the study of leadership survival in both international relations and comparative politics.

Conclusions

This study has proposed a number of institutions that have a substantial impact on the length of leadership tenure. In general, the results have supported the effect of the level of democracy, the coherence of institutions, the relationship with the military, the sovereignty of institutions, and the legitimacy of succession on the survival of leaders. For two of these variables, sovereignty of institutions and legitimacy of succession, the effect was as predicted, but the results were not durable when controlling for other factors, most likely due to collinearity between these institutional characteristics and other covariates. More work needs to be done to see how these institutional variables affect regime performance or are affected by country characteristics.

Level of democracy, coherence of institutions, and relationship to the military have a consistent effect on leadership survival, but their impact varies over the leader's time in office, which is not captured in the comparative literature. The results clearly indicate that higher levels of democracy, and therefore competitiveness and ease of removal, make leaders more likely to lose office. This effect, however, becomes stronger as a leader's time in office increases. Most likely, this is the result of set term lengths in democracies, although such a hypothesis has not heretofore been explicitly stated in the literature.

Coherence of institutions also has a non-proportional impact over time. The results suggest that coherence initially makes leaders less stable, but as time in office increases so does the stabilizing impact of coherence for leaders. This is the likely consequence of moving a hypothesis developed in the study of regime survival to the study of leadership survival. As already discussed, less competitive regimes result in longer tenures, including in mixed authoritarian regimes. However, these results suggest that, over time, that incoherence among institutions makes leadership more and more unstable compared to leaders in fully authoritarian or fully democratic polities.

Finally, the effect of the military also has a non-proportional impact on leadership survival. The results clearly indicate that the involvement of the military in politics is initially stabilizing, most likely because such regimes already have a monopoly over the strongest mechanism of force in the state. As the institutional characteristics outline in the theory section take their toll on the leader's legitimacy and willingness to hold office, the involvement of the military makes leaders much more likely to step down.

These results paint a much more elaborate relationship between institutional characteristics and the length of leadership tenure, especially in the non-democratic context. Indeed, they provide a much more broadly comparative and theoretically satisfying interpretation

of institutional effects and domestic-level political processes on leadership survival than was initially anticipated. The next step for this literature is to take these results and explore the impact of these institutional characteristics on leader behavior. Given the large literature on the effects of leadership tenure, it is likely that these institutions have broad implications across the study of political science.

Works Cited

- Ahn, Yinhay. 2002. North Korea in 2002: The Politics of Survival. *Asian Survey*, 43(1): 49-63.
- Alvarez, Mike, Jose Antonio Cheibub, Fernando Limongi, and Adam Przeworski. 1999. *ACLP Political and Economic Database*. Available online at <http://www.ssc.upenn.edu/~cheibub/data/Default.htm>.
- Banks, Arthur S. 1996. *Cross-National Time-Series Data Archive*. Binghamton, NY: Center for Social Analysis, State University of New York at Binghamton, Electronic File.
- Barbieri, Katherine. 2002. *The Liberal Illusion: Does Trade Promote Peace?* Ann Arbor, MI: University of Michigan Press. Data available online at <http://people.cas.sc.edu/barbierk/databases.html>.
- Barro, Robert. 1997. *Determinants of Economic Growth: A Cross-Country Empirical Study*. Cambridge, UK: Cambridge University Press.
- Beck, Nathaniel, Jonathan N. Katz and Richard Tucker. 1998. Taking Time Seriously: Time-Series-Cross-Section Analysis with a Binary Dependent Variable. *American Journal of Political Science* 42(4): 1260-1288.
- Bienen, Henry and Nicholas van de Walle. 1991. *Of Time and Power*. Stanford, CA: Stanford University Press.
- Bollen, Kenneth A. 1990. Political Democracy: Conceptual and Measurement Traps. *Studies in Comparative International Development* 25(1): 7-26.
- Bollen, Kenneth A. and Robert Jackman. 1989. Democracy, Stability and Dichotomies. *American Sociological Review* 54(4): 612-621.
- Box-Steffensmeier, Janet M. and Bradford S. Jones. 1997. Time is of the Essence: Event History Models in Political Science. *American Journal of Political Science* 41(4): 1414-1461.
- . 2004. *Event History Modeling: A Guide for Social Scientists*. Cambridge, UK: Cambridge University Press.
- Box-Steffensmeier, Janet M. and Christopher Zorn. 2001. Duration Models and Proportional Hazards in Political Science. *American Journal of Political Science* 45(4): 972-988.
- Box-Steffensmeier, Janet M., Dan Reiter and Christopher Zorn. 2003. Nonproportional Hazards and Event History Analysis in International Relations. *Journal of Conflict Resolution* 47(1): 33-53.
- Bueno de Mesquita, Bruce. 2007. Game Theory, Political Economy, and the Evolving Study of War and Peace. *American Political Science Review*, 100(1): 637-642.

Bueno de Mesquita, Bruce, James D. Morrow, Randolph M. Siverson, and Alastair Smith. 1999. Policy Failure and Political Survival: The Contribution of Political Institutions. *Journal of Conflict Resolution* 43(2): 147-161.

---. 1999. An Institutional Explanation of Democratic Peace. *American Political Science Review* 93(4): 791-807.

---. 2002. Political Institutions, Policy Choice and the Survival of Leaders. *British Journal of Political Science* 32(4): 559-590.

Bueno de Mesquita, Bruce, Alastair Smith, Randolph M. Siverson, and James D. Morrow. 2003. *The Logic of Political Survival*. Cambridge, MA: MIT Press.

---. 2003. *The Logic of Political Survival Data Source*. Available online at <http://www.nyu.edu/gsas/dept/politics/data/bdm2s2/Logic.htm>.

Chiozza, Giacomo and H.E. Goemans. 2004. International Conflict and the Tenure of Leaders: Is War Still 'Ex Post' Inefficient? *American Journal of Political Science* 48(3): 604-619.

Colaresi, Michael. 2004. When Doves Cry: International Rivalry, Unreciprocated Cooperation, and Leadership Turnover. *American Journal of Political Science* 48(3): 555-570.

Dahl, Robert A. 1989. *Democracy and its Critics*. New Haven, CT: Yale University Press.

Eckstein, Harry. 1969. Authority Relations and Governmental Performance: A Theoretical Framework. *Comparative Political Studies* 2(3): 269-325.

Fearon, James D. 1994. Domestic Political Audiences and the Escalation of International Disputes. *American Political Science Review* 88(3): 577-592.

Gasiorowski, Mark J. 1995. Economic Crisis and Political Regime Change: An Event History Analysis. *The American Political Science Review* 89(4): 882-897.

Geddes, Barbara. 1999. *Paradigms and Sandcastles: Theory Building and Research Design in Comparative Politics*. Ann Arbor, MI: University of Michigan Press.

Geddes, Barbara. 2002. The Effect of Foreign Pressure on the Durability of Dictatorship. Presented at the Annual Meeting of the American Political Science Association, August, Boston, MA.

Gleditsch, Kristian Skrede. 2002. Expanded Trade and GDP Data. *Journal of Conflict Resolution* 46(5): 712-724.

Goemans, H.E. 2000. Fighting for Survival: The Fate of Leaders and the Duration of War. *Journal of Conflict Resolution* 44(5): 555-579.

Goemans, Hein, Kristian Skrede Gleditsch, Giacomo Chiozza. 2006. *Archigos: Data Base on*

Leaders 1875-2004, version 2.5. Available online at <http://mail.rochester.edu/~hgoemans/data.htm>.

Gurr, Ted Robert. 1974. Persistence and Change in Political Systems, 1800-1971. *American Political Science Review* 68(4): 1482-1504.

Gurr, Ted Robert, Keith Jagers and Will Moore. 1990. The Transformation of the Western State: The Growth of Democracy, Autocracy and State Power Since 1800. *Studies in Comparative Politics* 25(1): 73-88.

Hellman, Joel S. 1998. Winners Take All: The Politics of Partial Reform in Postcommunist Transitions. *World Politics* 50(2): 203-234.

Huntington, Samuel P. 1968. *Political Order in Changing Societies*. New Haven, CT: Yale University Press.

Kennedy, Ryan. 2007. On the Clock: Event History Models in the Study of Leadership Tenure. Presented at the 2007 APSA Summer Methods Meeting, State College, PA.

King, Gary, James Alt, Nancy Burns, and Michael Laver. 1990. A Unified Model of Cabinet Dissolution in Parliamentary Democracies. *American Journal of Political Science* 34(3): 846-871.

Lake, David and Matthew A. Baum. 2001. The Invisible Hand of Democracy: Political Control and the Provision of Public Services. *Comparative Political Studies* 34(6): 587-621.

Laver, Michael and Kenneth A. Shepsle. 1998. Events, Equilibria, and Government Survival. *American Journal of Political Science* 42(1): 28-54.

Maoz, Zeev and Bruce Russett. 1993. Normative and Structural Causes of Democratic Peace, 1946-1986. *American Political Science Review* 87(3): 624-638.

Markoff, John and Silvio R. Duncan Baretta. 1990. Economic Crisis and Regime Change in Brazil: The 1960s and 1980s. *Comparative Politics* 22(4): 421-444.

Marshall, Monty G. and Keith Jagers. 2002. *Polity IV Project: Political Regime Characteristics and Transitions, 1800-2002*. Available at: <http://www.cidcm.umd.edu/polity/>.

McGuire, Martin and Mancur Olson. 1996. The Economics of Autocracy and Majority Rule. *Journal of Economic Literature* 34(1): 72-96.

Mishler, William and Anne Hildreth. 1984. Legislatures and Political Stability: An Exploratory Analysis. *Journal of Politics* 46(1): 25-59.

Nathan, K. S. 1988. Malaysia in 1988: The Politics of Survival. *Asian Survey*, 29(2): 129-139.

Peceny, Mark, Caroline C. Beer, and Shannon Sanchez-Terry. 2002. Dictatorial Peace?

American Political Science Review 96(1): 15-26.

Przeworski, Adam. 1991. *Democracy and the Market*. Cambridge, UK: Cambridge University Press.

Przeworski, Adam and Fernando Limongi. 1997. Modernization: Theories and Facts. *World Politics* 49(2): 155-183.

Przeworski, Adam, Michael E. Alvarez, Jose Antonio Cheibub, and Fernando Limongi. 2000. *Democracy and Development: Political Institutions and Well-Being in the World, 1950-1990*. Cambridge, UK: Cambridge University Press.

Riker, William H. 1982. *Liberalism Against Populism: A Confrontation between the Theory of Democracy and the Theory of Social Choice*. Long Grove, IL: Waveland Press, Inc.

Sarkees, Meredith Reid. 2000. The Correlates of War Data on War: An Update to 1997. *Conflict Management and Peace Science* 18(1): 123-144. Data Available online at <http://cow2.la.psu.edu/>.

Singer, J. David, Stuart Bremer, and John Stuckey. 1972. Capability Distribution, Uncertainty, and Major Power War, 1820-1965. in Bruce Russett (ed) *Peace, War, and Numbers*, Beverly Hills, CA: Sage, 19-48. Data available online at <http://cow2.la.psu.edu/>.

Sklar, Richard L. 1987. Developmental Democracy. *Comparative Studies in Society and History* 29(4): 686-714.

Snitwongse, Kusuma. 1993. Thailand in 1993: The Politics of Survival. *Asian Survey*, 34(2): 147-152.

Stepan, Alfred. 1988. *Rethinking Military Politics*. Princeton, NJ: Princeton University Press.

Warwick, Paul V. 1994. *Government Survival in Parliamentary Democracies*. New York, NY: Cambridge University Press.

Weber, Max. 1947. *The Theory of Social and Economic Organization*, translated by A.M. Henderson and Talcott Parsons. New York: Oxford University Press.

Wilson, Sven E. and Daniel M. Butler. 2007. A Lot More to Do: The Sensitivity of Time-Series Cross-Section Analyses to Simple Alternative Specifications. *Political Analysis* 15(2): 101-123.

Zielinski, Jakub. 1999. Transitions from Authoritarian Rule and the Problem of Violence. *World Politics* 43(2): 213-228.

Tables

Table 1: Summary of Major Hypotheses and Variables

Variable Name	Operationalization	Description	Hypothesis
Level of Democracy	A version of the Polity IV measure of democracy, which assigns authoritarian and democratic characteristics for all country years. Formed by subtracting the total democratic institutional characteristics from the total authoritarian characteristics.	Range = [-10, 10] 10 th percentile = -9 25 th percentile = -7 50 th percentile = -1 75 th percentile = 8 90 th percentile = 10 Missing – 1,479	Increased competition and ease of removal, as represented by a higher Polity score should increase the probability of a leader losing office.
Coherence	A transformed version of Polity, formed by squaring the Polity score and dividing by 10. Indicates the extent to which a polity's institutions are fully authoritarian or democratic.	Range = [0, 10] Mean = 5.08 Std. Dev = 3.53 Missing – 1,479	Institutional coherence aligns the interests and support bases for institutions, making leadership tenure more stable.
Military regime	Coded 1 if the Banks dataset indicates the involvement of the military in government.	Range = [0, 1] 0 – 10,947 1 – 1,472 Missing – 2,429	Military involvement makes leaders more likely to step down or lose office.
Transition politics	Indicates if the government does not have territorial sovereignty or is undergoing a transition. Coded 1 if Polity IV = -77 or -88.	Range = [0, 1] 0 – 12,827 1 – 697 Missing – 1,324	Times where the government is unstable are unlikely to be periods of stable leadership.
Self-selection	Indicates if the leader came to power in an unregulated succession process (i.e. by force). Coded 1 if <i>XRREG</i> = 1.	Range = [0, 1] 0 – 12,215 1 – 1,309 Missing – 1,324	Leaders coming to power via self-selection will lack the legitimacy to hold power for a long period of time.

Table 2: Event History Analysis of Institutional Factors Involved in Leadership Survival, 1869-2001

	Model 1
Level of Democracy	1.050 (.003)
Level of Democracy x ln(t)	1.016 (.046)
Coherence	.954 (.051)
Coherence x ln(t)	.992 (.323)
Military regime	.968 (.433)
Military regime x ln(t)	1.461 (.001)
Transition politics	.961 (.423)
Transition politics x ln(t)	1.403 (.003)
Self-selection	1.247 (.045)
Observations	9,408
Subjects	1,924
Failures	1,727
Groups	167
Log-likelihood	-11352.000
Wald-test	343.92 (.000)

Note: Statistics are hazard ratios with p-values in parentheses. All tests are 1-tailed except those in the Wald-test.

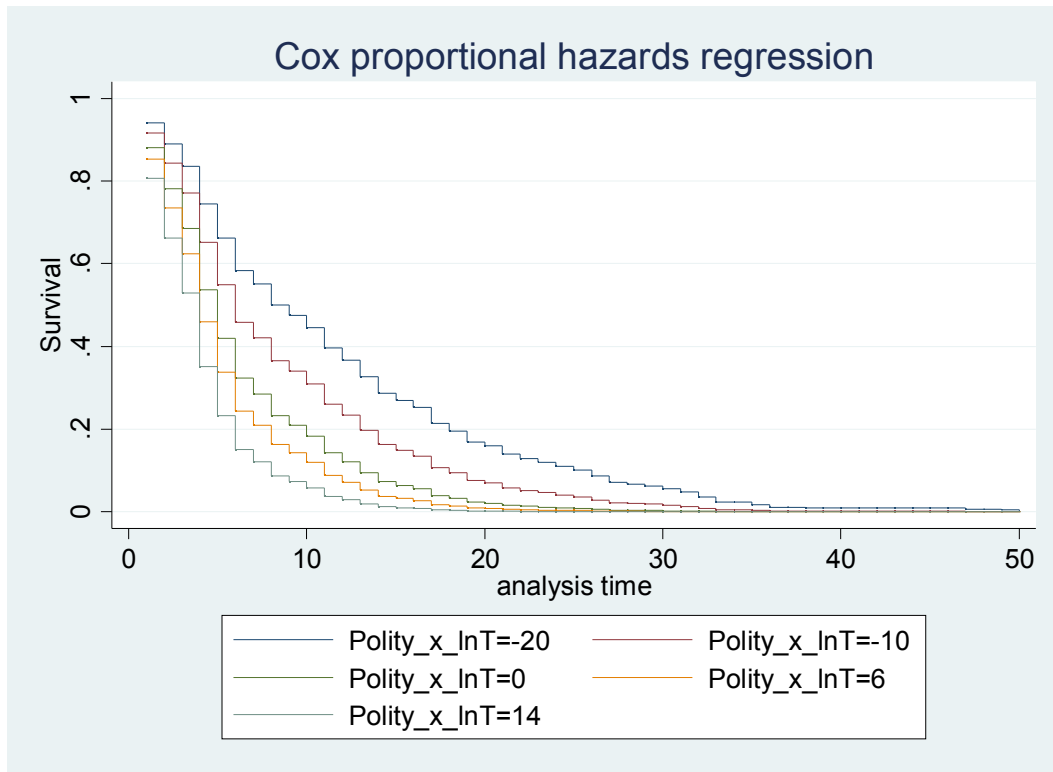
Table 3: Event History Analysis of Leadership Duration, 1869-2001

	Model 2	Model 3	Model 4
Level of Democracy	1.037 (.041)	1.022 (.179)	1.033 (.035)
Level of Democracy x ln(t)	1.034 (.001)	1.048 (.000)	1.038 (.000)
Coherence	1.023 (.240)	1.065 (.041)	1.038 (.089)
Coherence x ln(t)	.958 (.009)	.934 (.000)	.950 (.001)
Military regime	.656 (.032)	.654 (.039)	.684 (.082)
Military regime x ln(t)	1.590 (.001)	1.640 (.001)	1.606 (.001)
Transition politics	1.152 (.278)	1.361 (.120)	1.263 (.226)
Transition politics x ln(t)	1.092 (.244)	.974 (.424)	1.040 (.406)
Self-selection	1.077 (.322)	1.053 (.382)	1.071 (.326)
Economic development	.854 (.001)	.870 (.027)	.845 (.000)
Economic development x ln(t)	1.059 (.008)	1.057 (.033)	1.062 (.007)
Change in economic development	.997 (.002)	.997 (.007)	.997 (.034)
Trade openness	.952 (.057)	.972 (.207)	.949 (.018)
Change in trade openness	.998 (.003)	.998 (.012)	.998 (.052)
Population	1.287 (.001)	1.176 (.195)	1.305 (.000)
Population x ln(t)	.889 (.001)	.855 (.001)	.881 (.001)
Age	1.010 (.108)	1.007 (.221)	1.009 (.096)
Age x ln(t)	1.007 (.064)	1.013 (.007)	1.010 (.009)
Previous times in office	1.021 (.282)	.926 (.020)	.964 (.218)
Civil war	.951 (.330)	1.104 (.203)	1.017 (.443)
Inter-state war	.750 (.038)	.768 (.067)	.760 (.046)
Extra-state war	1.389 (.108)	1.423 (.030)	1.406 (.012)
Ethnic division	1.007 (.053)	1.019 (.050)	1.009 (.009)
Ethnic division x ln(t)	.999 (.393)	.996 (.088)	.999 (.281)
Winning coalition size	.540 (.012)	.557 (.032)	.587 (.034)
Selectorate size	.859 (.271)	.846 (.256)	.820 (.236)
Selectorate size x ln(t)	.851 (.132)	.813 (.100)	.850 (.151)
Country	---	Omitted for space	---
Observations	7,072	7,072	7,072
Subjects	1,480	1,480	1,480
Failures	1,339	1,339	1,339
Groups	123	123	---
Log-likelihood	-8348.3064	-8217.7271	-8325.7546
Wald-test	506.04 (.000)	---	359.93 (.000)
Θ	---	---	.108 (.000)

Note: Statistics are hazard ratios with p-values in parentheses. All tests are 1-tailed, except those for the Wald-test and Θ . The shared frailty parameter Θ measures the variance of a Gamma distribution with mean equal to 1.

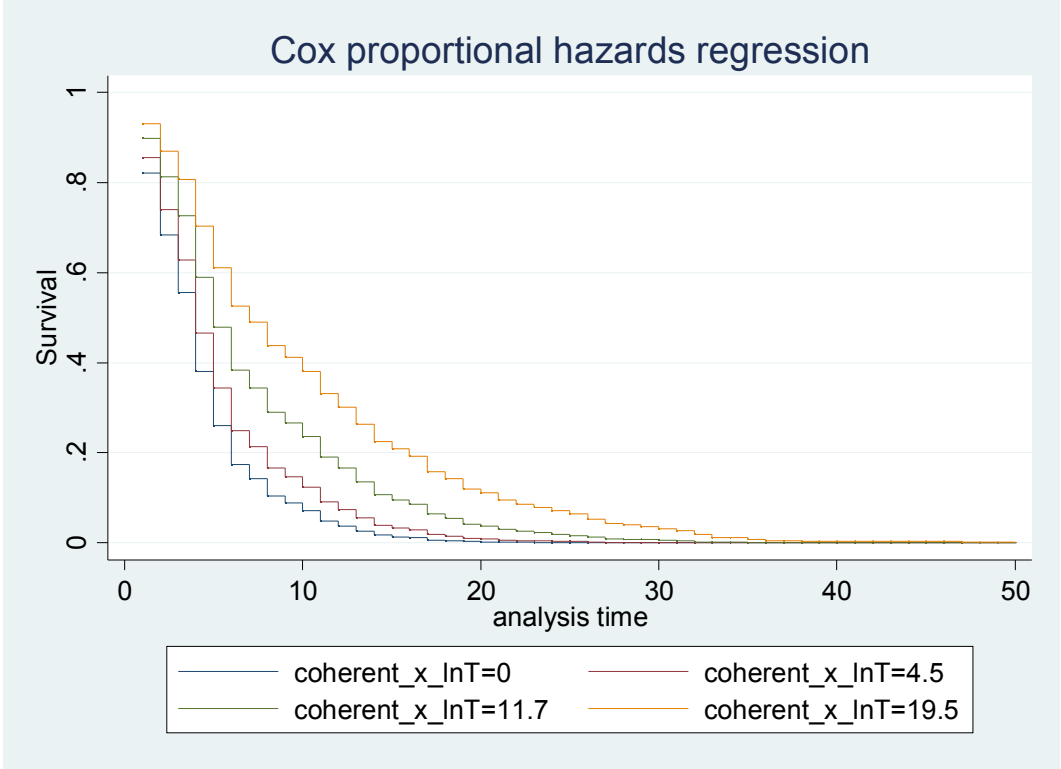
Figures

Figure 1: Marginal Effect of Democracy x ln(t)



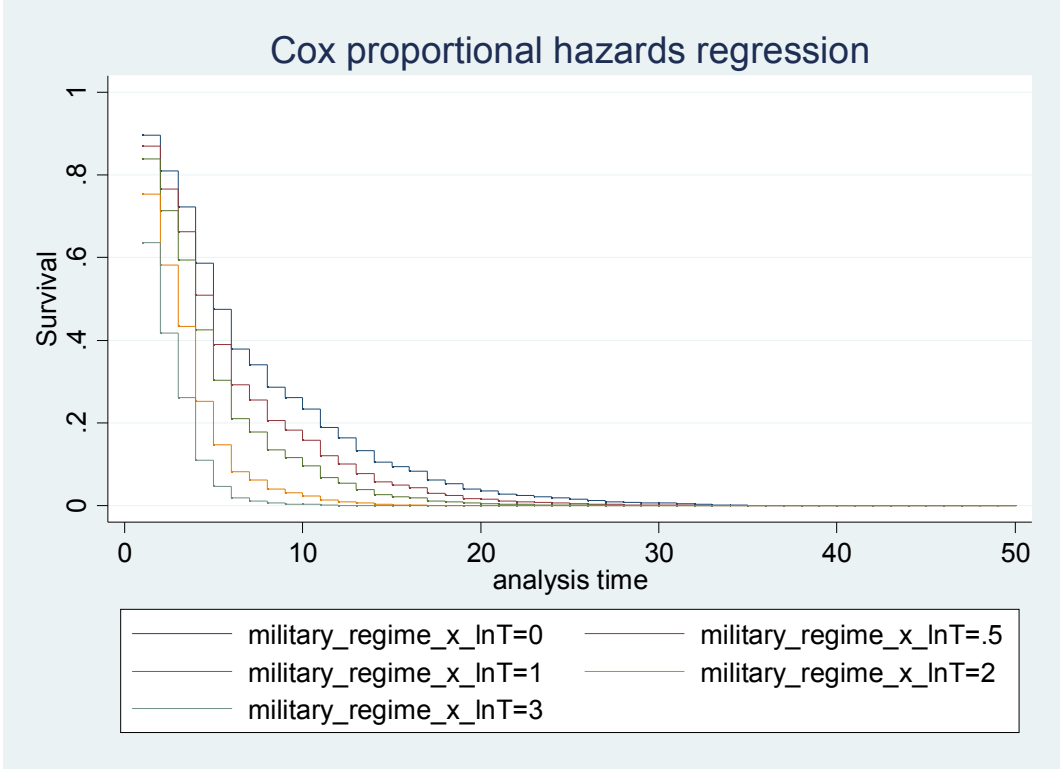
Note: All plots evaluated at $\Theta = 1$. All other variables are set to their mean.

Figure 2: Marginal Effect of Coherence x ln(t)



Note: All plots evaluated at $\Theta = 1$. All other variables are set to their mean.

Figure 3: Marginal Effect of Military Regime x ln(t)



Note: All plots evaluated at $\Theta = 1$. All other variables are set to their mean.

Appendix I: Summary of Control Variables

Variable Name	Operationalization	Description
Economic Development	Measured as the logarithm of the level of energy consumption per-capita. Drawn from the Correlates of War (COW) capabilities dataset (see Singer, Bremer and Stuckey, 1972).	Range = [0, 14.95] Mean = 8.03 Std. Dev. = 2.90 Missing = 2,806
Change in economic development	This variable is computed as the difference between the logarithm of economic development at the current time and in the previous year, multiplied by 100.	Range = [-524.35, 849.59] Mean = 6.35 Std. Dev. = 38.69 Missing = 3,020
Trade openness	The logarithm of the standard openness index. Openness is calculated as the total value of exports plus the total value of imports, divided by energy consumption. Data is taken primarily from Barbieri (2002), with missing data linearly imputed using trade data from Gleditsch (2002) and the World Bank's World Development Indicators.	Range = [-9.93, 5.45] Mean = 6.35 Std. Dev. = 38.69 Missing = 3,319
Change in trade openness	This variable is computed as the difference between the logarithm of trade openness at the current time and the value in the previous year, multiplied by 100.	Range = [-853.89, 785.60] Mean = .39 Std. Dev. = 48.68 Missing = 3,585
Population	Measured as the logarithm of the country's total population. Drawn from the COW capabilities dataset.	Range = [4.69, 14.06] Mean = 8.84 Std. Dev. = 1.61 Missing = 1,520

Age	Measured as the leader's age in the current year. Data drawn from Goemans, Gleditsch and Chiozza (2007).	Range = [11, 93] Mean = 54.66 Std. Dev. = 12.14 Missing = 180
Previous times in office	A count variable measuring the number of times a leader has previously ruled a country. Data drawn from Goemans, Gleditsch and Chiozza (2007).	Range = [0, 6] 0 – 13,336 1 or more – 2,116 Missing = 0
Civil war	A dummy variable indicating whether an intra-state war is ongoing in that year according to COW data. Drawn from The Logic of Political Survival Datasource (Bueno de Mesquita et. al., 2003b). See also Sarkees (2000).	Range = [0, 1] 0 – 13,445 1 – 1,023 Missing = 380
Inter-state war	A dummy variable indicating whether an inter-state war is ongoing in that year according to COW data. Drawn from The Logic of Political Survival Datasource (Bueno de Mesquita et. al., 2003b). See also Sarkees (2000).	Range = [0, 1] 0 – 13,774 1 – 694 Missing = 380
Extra-state war	A dummy variable indicating whether an extra-state war is ongoing in that year according to COW data. Drawn from The Logic of Political Survival Datasource (Bueno de Mesquita et. al., 2003b). See also Sarkees (2000).	Range = [0, 1] 0 – 14,130 1 – 338 Missing = 380
Ethnic division	Percentage of the population of the largest ethnic group, measured in the year for which data are available (roughly 1976-1985). Data drawn from the ACLP dataset (Alvarez et. al., 1999) and extended to cover the period under inspection here.	Range = [18, 100] Mean = 72.26 Std. Dev. = 23.54 Missing = 2,405

Winning coalition size	Indicates the number of people whose support is necessitated for a leader to take or hold office (see Bueno de Mesquita et. al., 1999a; 2003a). Data drawn from the Logic of Political Survival Datasource (Bueno de Mesquita et. al., 2003b).	Range = [0, 1] 0 – 1,611 .25 – 3,158 .5 – 3,445 .75 – 3,410 1 – 2,411 Missing = 783
Selectorate size	Indicates the number of people who are legally entitled to participate in the selection of the leader (see Bueno de Mesquita et. al., 1999a; 2003a). Data drawn from the Logic of Political Survival Datasource (Bueno de Mesquita et. al., 2003b)	Range = [0, 1] 0 – 1,580 .5 – 486 1 – 10,332 Missing = 783
Countries	Dummy variable assigned for each country in the data. Based on the COW id number.	Range = [0, 1] Separate variables assigned for 186 country codes.