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Does Competence Matter?

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Abstract

We examine whether economic and military competence of political leaders affect their duration in office. We introduce leader heterogeneity in the selectorate theory of Bueno de Mesquita et al. (2003) and derive the hypothesis that in the presence of a revolutionary threat, economic competence is negatively related to political survival, but that the effect is moderated by the size of the winning coalition. As military and economic competence are negatively correlated, the opposite holds for military competence. We present empirical estimates using proxies for military and economic competence in a parametric Weibull duration model that support our theoretical predictions.

JEL-Code: D020, D720, D740, O120.

Keywords: political leader, survival analysis, leader competence, selectorate theory.

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1 Introduction

Even though almost all political leaders enter office with the aim to maximize tenure, we observe wide variety in actual tenure throughout the world. Whereas King Sobuhza II of Swaziland stayed in power for 62 years, many leaders do not stay in power for more than a few years. The spread in tenure of political leaders across and within countries has led to research focusing on their political survival. Taking the political leader as the unit of analysis, these studies mainly have focused on political, institutional, and economic variables to explain office duration.[1]

Political leaders can maximize their time in office in different ways. They can increase the welfare of all citizens or may choose to only assure the welfare of a small elite to safeguard their position. Political leaders can also stay in power via repression. In this paper, we examine how the competence levels of political leaders with respect to welfare maximization and repression influence their political survival. We study this relation both theoretically and empirically.

We develop a model, which is based on the selectorate theory of Bueno de Mesquita et al. (2003), but has the novel feature that it allows for heterogenous leaders. We evaluate the implications of the trade-off between economic and military competence by studying the interaction between the winning coalition, i.e., the group of elites who can prioritize its leader choice, and the opposition, i.e., the majority of citizens, that can initiate a revolution. In our model, we incorporate the finding of Besley et al. (2011) that better educated leaders are economically more competent and generate more output which is allocated to public goods and private rents. More economically competent leaders seem to appeal to both the elite and the opposition, however, economic competence comes at the cost of military competence. The latter is important as military competence is required to fend off revolutionary attempts and to safeguard the position of the current elite and their access to rents.

From our model, we derive the hypothesis that even though the members of the winning coalition obtain more private rents from an economically competent leader, they may favor one with more military experience when the size of the winning coalition is small. The reason is that the risk of losing coalition

[1] See, e.g., Bueno de Mesquita and Smith, 2010; Bueno de Mesquita and Siverson, 1995; Przeworski and Gandhi, 2007.

membership outweighs the immediate benefit of economic prosperity under a more economically competent leader. As private rents need to be shared among the winning coalition members, a small coalition implies that less rents have to be shared and therefore increases the value of having a more military competent leader. On the other hand, when winning coalitions are large, public goods become relatively more important and coalition members are more likely to favor an economically competent political leader.

We find empirical support for our hypothesis when adding proxies for economic and military competence to the empirical models as used by Bueno de Mesquita and Smith (2010). That is, we estimate a parametric Weibull duration model on a sample of more than 2000 political leaders for the period 1875-2004. The results are robust to alternative model specifications and measures of economic competence. Furthermore, we find that the results are more pronounced when we focus on countries that fit in with our theoretical model, i.e., countries with high levels of mass civil protest or countries that are autocracies.

By introducing leader heterogeneity in the selectorate theory, we bridge the gap between the empirical literature emphasizing the relevance of leader characteristics for economic and political outcomes[2], and the theoretical framework offered by the selectorate theory to study leader survival. Connecting these strands of the literature teaches us that political regimes facing the threat of revolution do not only select leaders of low economic competence (Besley and Reynal-Querol, 2011), the impact of competent leaders is also constrained as office duration is likely to be short. As such, weak polities find themselves in a poverty trap as the ruling elite will always prefer a strong militant leader above an economic competent one.

The remainder of the paper is structured as follows. In section 2 we derive our hypothesis on the basis of our theoretical model. Section 3 discusses our data and the duration framework employed in our empirical analysis. In section 4 the estimation results are presented. In section 5 we reflect on our findings and conclude.

[2]see, e.g., Jones and Olken (2005), Jones and Olken (2009), Dreher et al. (2009), Horowitz et al. (2005), Horowitz and Stam (2012), Chiozza and Goemans (2011).

2 Theoretical Model

We set up a model in which the winning coalition chooses a political leader, whilst facing a revolution threat from the opposition. Before elaborating, we start with an introduction of the main concepts. We introduce the winning coalition as well as the opposition. Furthermore, we discuss the candidates and how leader turnover is determined. Thereafter, we describe the timeline of the game that is played between the winning coalition and the opposition and discuss the expected utility function of a winning coalition member. Finally, we show how the incumbent's competence level influences his survival rate and derive the main hypothesis that we test in section 3.

2.1 The main concepts

2.1.1 The winning coalition and the opposition

Consider a mass of residents of size 1. A subset with political rights form the selectorate (**S**) with size, s, which ranges from 0 to 1. Selectorate membership depends on a mix of characteristics such as birthplace, lineage, gender, etc.[3] Within the selectorate there is a group of residents, called the winning coalition (**W**). It is the smallest group with political power to bestow a leader. The size of the winning coalition is equal to w, $w \in [0, s]$. w and s are assumed to be exogenously given and fixed.[4] The value of w depends on the distribution of political power and resources such as arms, capital and abilities. In a military regime, w depends relatively more on the distribution of arms and military power, while it depends more on capital distribution in advanced democracies.[5] In a directly elected presidential system S amounts to all adults (i.e. $s = 1$). Support from half of the selectorate in such a system ensures political survival ($w = \frac{s}{2}$). However, in a Westminster type of parliamentary system, the leader needs to secure the support of half of the people in half of the districts ($w = \frac{1}{4}s$). Military juntas or monarchies have much smaller selectorates and even smaller winning coalitions that are formed by military elites or aristocrats. For example, in the

[3]For instance, in the U.S., women were denied of voting rights until the passage of the Nineteenth Amendment to the United States Constitution in 1920. Thus, before that point, at least half of the residents in the U.S. is not included in the selectorate. For more details, see Bueno de Mesquita et al. (2003)

[4]Questions on how w and s are determined have been analyzed by Ray (1999), Konishi and Ray (2003), Acemoglu et al. (2008) etc. These studies look at the dynamics in winning coalition formation. They analyze how instutions and distribution of resources/political power affect the size and stability of coalitions. Instead of furthering research in this direction, we focus on how existing coalitions influence the selection of leaders.

[5]The size of the selectorate and the winning coalition are related to the concepts of de facto and de jure political powers as discussed in Acemoglu and Robinson (2006). While de jure political power corresponds to the political rights granted by law, de facto political power originates from resources. We argue that the size of the selectorate represents the de jure democracy level while the size of winning coalition represents the de facto democracy level.

former Soviet Union, only communist party members were part of the selectorate. Since party members accounted for less than 7 percent of the entire population in the 1970s, the value of s was close to zero. At the same time, the Politburo was in charge to make policy and to select the political leader. Since the Politburo had only 14 full members, w was even closer to zero.

The mass of residents is divided into three disjoint sets: 1) residents that are not in the selectorate ($\bar{\mathbf{S}}$), 2) residents that are in the selectorate but not in the winning coalition ($\bar{\mathbf{W}}$), and finally 3) residents that are in the winning coalition ($\mathbf{W}$). The corresponding representative members are $\bar{S}_i$, $\bar{W}_i$ and W_i. Each representative member makes the decision for the group. Since $\mathbf{W}$ is the smallest group with political power to select a leader, it follows that the joint political power of $\bar{\mathbf{W}}$ and $\bar{\mathbf{S}}$ is equivalent to the power of $\mathbf{W}$. This implies that a revolution will never occur when $\bar{\mathbf{W}}$ and $\bar{\mathbf{S}}$ do not join forces. The opposition ($\bar{\mathbf{W}}$ and $\bar{\mathbf{S}}$) can reject the winning coalition's choice via a revolution when they solve their collective action problem. Both groups need to find it beneficial to revolt and must be able to act together. When the two groups face an incumbent with repression skills and military competence, the opposition can be dismantled and appeased.

2.1.2 The candidates

The winning coalition chooses from two candidates: the incumbent (C_0) and the (unknown) challenger (C_1). Each candidate has two dimensions of competence: economic competence (e_j, $j = 0, 1$), and military competence (m_j). e_j is uniformly distributed between 0 and 1. While the incumbent is in office, his economic competence is publicly observed. Based on his economic competence, residents can form an expectation about his military competence (see explanation below). At the same time, the challenger is randomly drawn from the candidate pool. The candidate pool includes candidates with economic competence level following a uniform distribution between 0 and 1 (i.e. $e_j \sim U[0, 1]$). His economic competence is unknown to the residents when the winning coalition makes their leader choice.[6]

Economic competence determines the level of aggregate output (i.e. $Y = e_j$) while military competence

[6]Here we assume the challenger's economic competence is revealed to the opposition after the winning coalition makes their choice. For the winning coalition, choosing from the incumbent and the challenger is like whether to have a fair election or not. Before the election, they do not know whom the incumbent is up against. After they conduct the election, fair or not, the opposition gets to find out the identity of the challenger and decides whether to revolt.

determines the incumbent's ability to avoid a revolution. Military competence here represents the incumbent's ability to repress and dismantle the collective actions of $\bar{\mathbf{W}}$ and $\bar{\mathbf{S}}$. The incumbent is able to separate the two groups with expected probability $E(m_0)$. Based on our data (see section 3), we take it as a stylized fact that m_j is negatively correlated with e_j. Here, we assume that: $E(m_j) = 1 - \alpha e_j$, where α indicates the correlation between e_j and m_j, which (in line with our data) is assumed to be sufficiently high. One explanation for this negative correlation is that it takes time to develop competence in either one dimension. As time is scarce, the other dimension cannot be developed sufficiently. In other words: if the candidate has spent a long time serving in the military, he would not have had time to go to university.

In line with the selectorate theory, we assume that each candidate has a specific winning coalition. The composition of the candidate-specific coalition is only observed after the candidate assumes power. This implies that staying with the incumbent means no change in the political setup. Furthermore, a peaceful transition to the challenger gives each selectorate member a probability of $\frac{w}{s}$ of being in the new coalition.

2.1.3 Public goods and private rents

The level of aggregate output, determined by the leader's economic competence, is divided into public goods and private rents.[7] It is exogenously given that a fraction x ($x \in (0,1)$) of aggregate output goes to private rents (denoted as z_j) while fraction $1-x$ of aggregate output is used to produce public goods (denoted as g_j).[8] Public goods are accessible to every selectorate member while private rents are evenly shared among the winning coalition members. For simplicity, we assume that public goods are produced according to a one-for-one production technology, with 1 unit of input producing 1 unit of public goods.[9] Thus, each selectorate member receives $e_j(1-x)$ of public goods and private rents equal $e_j\frac{x}{w}$. Since a winning coalition member receives both public goods and private rents, he has the following payoff function:

$$U^W = g_j + z_j = e_j(1-x) + e_j\frac{x}{w}, \text{ for } j \in \{0,1\}$$

[7] Bueno de Mesquita and Smith (2009) assume that the leader can retain the difference between government revenue and the sum of public goods and private rents, and the difference is used to measure leader survival. Here, we impose a budget constraint on the incumbent.

[8] We assume that the model is in equilibrium, which means when w is given x becomes exogenous as well. See Bueno de Mesquita et al. (2003) for details.

[9] Assuming different production costs for public goods does not change our results. A detailed proof is available upon request.

2.1.4 Leader turnover

The challenger can come into power in two ways: 1) peacefully, i.e. being proposed by the winning coalition and accepted by the opposition; or 2) violently, i.e. not being proposed by the coalition but supported by the opposition in a revolution. Such a revolution, however, will destroy part (k) of aggregate output.

If the winning coalition proposes the challenger, the challenger is always supported by the opposition and the incumbent loses power. The reason is that accepting the challenger makes $\bar{S}_i$ always better of. This can be explained as follows: a revolution against the challenger will bring in the incumbent, who will keep the existing political structure. Thus, engaging in the revolution will cost the residents outside the selectorate, $\bar{S}_i$, k but will not change their status. Since $\bar{S}_i$ will not revolt, $\bar{W}_i$ will not revolt either, because a revolution can only be initiated when $\bar{\mathbf{W}}$ and $\bar{\mathbf{S}}$ join forces. Hence, proposing the challenger will always imply peaceful leadership change.

When the challenger is not proposed by the winning coalition and the opposition jointly attempts a revolution, two scenarios could occur. First, if the incumbent turns down the attempt, the opposition is forced to accept him. Second, if the revolution attempt succeeds, it costs k per resident and the challenger democratize the regime.

Since in most cases revolutionaries are motivated by the promise of democratization, we assume here (like Bueno de Mesquita and Smith, 2010) that if the challenger is brought in by a revolution, he will democratize the state by setting s to 1, w to its possible maximum, and that he abolishes private rents, i.e. $z_j = 0$ [10].

2.2 Timeline

Figure 1 visualizes the time line of the game. In words, it works as follows:

1. The incumbent is in power and his economic competence, e_0, is publicly observed. Nature draws an unknown challenger.

2. The winning coalition proposes the incumbent or the challenger.

[10] Since the incumbent represents the status quo, he will not democratize the state. Furthermore, political structures (i.e. s and w) often remain the same after a successful revolution. Our results are not sensitive to this assumption. Detailed proof will be provided upon request.

3. The economic competence of the challenger, e_1, is revealed.

4. The opposition decides on whether to revolt:

4.1 If the challenger is proposed, the opposition will not revolt and the challenger comes into power.

4.2 If the incumbent is proposed, the opposition will revolt when a suitable challenger is observed, i.e. $e_1 > k + e_0(1-x)$ (See section 2.3). If this revolution condition is fulfilled and the incumbent cannot dismantle it, the challenger comes into power. Otherwise, the incumbent comes into power.

5. Leaders come into power, the new winning coalition is identified and payoffs are realized.

[Insert Figure 1 about here.]

2.3 Winning coalition members' expected utility

In this section, we discuss the expected utility of winning coalition members. Their expected utility when they propose the challenger depends on the expected economic competence of the challenger, $E(e_1)$, and the probability of remaining in the coalition, $\frac{w}{s}$. At the beginning of the period, the winning coalition does not know anything about the challenger, who is randomly drawn from the candidate pool. Since $e_1 \sim U[0,1]$, the expected economic competence of the challenger, $E(e_1)$, equals $\frac{1}{2}$. The expected utility of W_i of proposing the incumbent has the following form:

$$EU(C_0) = \rho(1-E(m_0))(E(e_1|R)-k) + (1-\rho(1-E(m_0)))e_0\left(\frac{x}{w}+1-x\right) \quad (1)$$

This equation has two components: 1)the expected utility after a successful revolution, which happens with probability $\rho(1-E(m_0))$, where ρ is the probability of a revolution attempt and $E(m_0)$ is the expected level of military competence of the incumbent, and 2) the expected utility without a revolution, which happens with probability $1-\rho(1-E(m_0))$.

The opposition takes into account how likely it is that a revolution attempt will be dismantled and how costly it will be. For the residents outside the selectorate, $\bar{S}_i$, she has the expected utility equal to $(1-E(m_0))(e_1-k)$ when she supports the challenger. The expected utility is affected by both the probability of having a successful revolution (i.e. $1-E(m_0)$) and the difference of benefits (e_1) and costs of a revolution (k). Meanwhile, supporting the incumbent brings $\bar{S}_i$ zero benefit. Hence, $\bar{S}_i$ requires $e_1 > k$ so

that her revolution cost will be covered by potential gains.

$\bar{W}_i$ will get $e_0(1-x)$ by staying loyal to the incumbent. If she revolts, her expected payoffs has two parts: 1) the part if a revolution occurs, i.e. $(1-E(m_0))(e_1-k)$, and 2) the part if a revolution is dismantled, i.e. $E(m_0)e_0(1-x)$. After comparing the expected payoffs between the two choices, $\bar{W}_i$ revolts when the challenger can cover her revolution cost and provide more public goods than the incumbent does, i.e. $e_1 > k + e_0(1-x)$.

Since $\bar{W}_i$ has a higher requirement for the challenger's economic competence level, the opposition will join force when $e_1 > k + e_0(1-x)$. Since e_1 follows a uniform distribution between 0 and 1, this requirement is fulfilled with probability $1-k-(1-x)e_0$. So, hence, we infer that $\rho = 1-k-(1-x)e_0$. Furthermore, using backward induction, we know that the expected economic competence of the challenger conditional on having a revolution is: $E(e_1|R) = \frac{1}{2}(1+k+e_0(1-x))$.

What remains is W_i's expected utility of proposing the challenger, which can be expressed as:

$$EU(C_1) = E(e_1)\left(\frac{x}{w}\frac{w}{s} + (1-x)\right) \tag{2}$$

2.4 Leader survival

The next step in our analysis goes from the expected utilities under the incumbent and the challenger to expressions for leader survival. To that end, we compute the difference in utility for W_i between proposing the incumbent and the challenger. We denote it as d. d takes the following form:

$$\begin{aligned} d =& EU(C_0) - EU(C_1) && (3)\\ =& \alpha\left((1-x)\left(1+\frac{x}{w}\right) - \frac{1}{2}\left(1-x^2\right)\right)e_0^3 - \alpha(1-k)\left(1-x+\frac{x}{w}\right)e_0^2 \\ &+ \left(\frac{x}{w}+1-x+\frac{\alpha}{2}(1-k)^2\right)e_0 - \frac{1}{2}\left(\frac{x}{s}+1-x\right) && (4)\end{aligned}$$

The incumbent's survival rate (denoted as p^s, $p^s \in [0,1]$) can be expressed as a linear function of d. As d gets larger, p^s gets higher, which implies that the incumbent is more likely to survive. We are interested

in how the incumbent's economic competence affects his survival. To that end, we take the first derivative of p^s with respect to e_0. As $\frac{\partial p^s}{\partial e_0}$ has the same sign as $\frac{\partial d}{\partial e_0}$, we calculate:

$$\frac{\partial d}{\partial e_0} = 3\alpha(1-x)(\frac{1}{2}+\frac{x}{w}-\frac{x}{2})e_0^2 - 2(1-k)\left(1-x+\frac{x}{w}\right)\alpha e_0 + 1 - x + \frac{x}{w} + \frac{1}{2}\alpha(1-k)^2 \tag{5}$$

It can be immediately observed that the impact of competence on survival depends on the size of the winning coalition. Therefore, we focus on the more interesting case $\frac{\partial^2 p^s}{\partial e_0 \partial w}$ and further explore how the impact of e_0 on p^s evolves with the size of the winning coalition, w, by calculating the second derivative $\frac{\partial^2 d}{\partial e_0 \partial w}$.

$$\frac{\partial^2 d}{\partial e_0 \partial w} = -\frac{x}{w^2}\left(1 - 2(1-k)\alpha e_0 + 3(1-x)\alpha e_0^2\right) \tag{6}$$

On the basis of these equations, we consider how the incumbent's economic competence affects his survival rate and how this effect is moderated by the size of the winning coalition. As the model is based on the assumption of a revolutionary threat, we here only consider values of the exogenous parameters that are likely for such countries. That is, countries facing revolutionary threats mostly have small winning coalitions (w close to 0), low income levels (revolution cost, k, small) and high income inequality (x goes to 1). For these parameter values, we derive our main proposition (A proof with a numerical example and simulation can be found in the Appendix):

Proposition 1. *In the presence of a revolutionary threat, an increase in economic competence decreases the probability of political survival (increases the hazard rate), but the size of the effect depends on the size of the winning coalition. As the winning coalition grows larger, the probability of survival increases (the hazard rate decreases). The opposite holds for the effect of military competence.*

The reason for the moderating effect of the size of the winning coalition is as follows. Members of the winning coalition obtain more public goods and private rents from an economically more competent incumbent as long as their access to the rents is secured. Under this circumstance, for a given level of military competence, they would always favor an economically more competent incumbent. However,

economic competence comes at the cost of less military competence. Hence, for every unit of additional welfare (due to increased economic competence), they face an increased of risk to lose private rents received under the incumbent (due to less military competence). As long as the size of the winning coalition is small, only few members are sharing the private rents. In such a case, winning coalition members have a strong preference for a military competent leader and therefore the hazard rate of economically competent leaders is high. However, when the winning coalition is larger, less private rents per head relative to public goods accrue to winning coalition members and an economically competent leader becomes more attractive.

As an extreme case, one could consider the situation when w approaches 0. In that case, winning coalition members have a strong preference for military competent incumbents. Despite the limited amount of output that is produced in such a case, the amount of private rents per winning coalition member grows so large that a military competent incumbent is always to be preferred. Even though, in practice, winning coalitions are never zero, empirically it would correspond to a regression model where there is no interaction effect between the competence levels of the incumbent and the size of the winning coalition. In a model where we estimate the unconditional effect of economic (military) competence on political survival we expect therefore a negative (positive) coefficient for the respective competence variable(s).

3 Model and data

In the remainder of the paper, we empirically test proposition 1. Here, we describe our empirical model and data. As we test our proposition within the framework of Bueno de Mesquita and Smith (2010), our empirical strategy closely follows theirs. The emphasis of our data discussion below will, therefore, be on how we proxy for the competence levels of political leaders.

As to the empirical model, the selectorate theory predicts a decline over time in the hazard rate of political leaders and this decline is greater for leaders in small-coalition systems Bueno de Mesquita and Smith (2010). The endogenous hazard rate makes the Cox proportionate hazard model inappropriate. Like Bueno de Mesquita and Smith (2010) we, therefore, estimate a parametric Weibull model where the hazard rate at year t is $h(t) = p\lambda t^{p-1}$, where we model p (the ancillary shape parameter) as a function of winning coalition size, w, to capture that the hazard ratio decreases faster over time for smaller coalitions

(regardless of the competence levels of the political leader, that is). In addition, λ is equal to $exp(\mathbf{X_{it}}'\boldsymbol{\beta})$, where $\mathbf{X_{it}}$ is a vector of independent variables measured for country i in year t. $\boldsymbol{\beta}$ is a vector of coefficients corresponding to $\mathbf{X_{it}}$.[11]

The dependent variable of our study is the hazard rate of political leaders. To measure leader changes, we use the Archigos data set of Goemans et al. (2009). This data set contains information on the dates of entry and exit from office for the effective leader of every independent country. The effective leader is that individual with *de facto* exercised political power in the country, which can be a president, a king, a prime minister etc. The data set contains information on 2098 leaders in 188 countries for the period 1875 to 2004.

Our main explanatory variables are economic and military competence of the political leader. As a proxy for economic competence we follow Besley et al. (2011), who find that better educated leaders cause better economic outcomes and, therefore, we use data on educational attainment of the political leader obtained before entering office. Likewise, we use data on military ranks (obtained before entering office) to proxy for military competence.

Our data on leader characteristics is mainly taken from Ludwig (2002), but supplemented with data from other sources.[12] The descriptive statistics are reported in Table 8. Following Ludwig (2002), educational attainment of a leader is categorized as follows: 1) illiterate (no formal education); 2) literate (no formal education); 3) elementary/primary school education or tutors; 4) high/finishing/secondary/trade school; 5) special training (beyond high school, such as mechanical, nursing, art, music, or military training [13] 6) college-educated; 7) qualifications from a graduate or professional school (e.g. master's degree); and 8) doctorates (e.g. Ph.D.). To keep consistency with e.g. Besley and Reynal-Querol (2011), we transform the eight-way classification into a four-way classification (labeled: *Education*4). *Education*4 contains discrete

[11] Throughout all model specifications, we follow Bueno de Mesquita and Smith (2010) and include the size of the winning coalition (w), the size of the selectorate(s), age of the incumbent (Age) and the interaction between age and the size of the winning coalition ($w * Age$) as control variables in the regressions. The data for *age* are taken from the Archigos data set.

[12] The priority order for the source of our data collection is: 1) Ludwig (2002); 2) Encyclopedia Britannica; 3) *Keesing's world news archive*, 4) Series of Who's Who and LexContent5 (provided by *LexisNexis Academic*search); 5) Biographies on government websites; 6) www.rulers.org; and 7) Wikipedia. We compared our data collected from the first six sources with Besley and Reynal-Querol (2011) and found they do not differ much (the correlation is 0.93). For cases where our data differ from Besley and Reynal-Querol (2011), we double-check the entries and stick with value obtained from the preferred first six sources. We used Besley and Reynal-Querol (2011) to fill in the gaps and replace the entries obtained from Wikipedia.

[13] Military training programs that do not end up with a bachelor degree fall in this category. These programs normally issue a certificate rather than a degree after completion. Military academy graduates are counted as college graduates.

numbers from 0 to 3 and has a value of zero if the educational attainment is below college education, 1 if leaders have a college degree, 2 if leaders have a master degree, and 3 if leaders have a Ph.D. degree.[14] We have information on educational attainment for 1710 political leaders.

Apart from absolute educational attainment, we also construct a relative measure because, for example, a college graduate in a country like Chad (where the literacy rate is only about 35 percent)[15], is considered to be highly educated whereas in a developed country like Canada 50 percent of the population has a bachelor degree. Our relative measure is based on the number of years the political leader received education relative to years of education of the average citizen of the country.[16] For country-level data on educational attainment, we use data from Barro and Lee (2001) (this relative measure is labeled *Education distance*(BL)) and, to obtain a longer time span data, from Morrisson and Murtin (2012) (this relative measure is labeled: *Education distance*(MM)).

We construct measures of military competence on the basis of military attainment. We categorize leaders according to the highest military rank they have obtained before they assume power. We adopt the NATO coding with respect to the ranking of officers, which goes from OF-1 (e.g. Lieutenant in the U.S.) to OF-10 (e.g. Five-Star General in the U.S.) and construct a variable (labelled: $NATO\ rank$ that goes from 0 (civilian or ranks below OF-1) to 10 (OF-10)).[17] We consider the military rank of a political leader to be a good proxy for military competence as it can capture how well the incumbent is able to avoid the uprising of the opposition (or defeat the opposition). This can be either because high ranked leaders have superb military and tactical skills, but also because they have better ties with the military to protect their position and that of the political elite.

To maintain consistency between our competence variables, we also construct a measure based on four categories for military competence ($Military4$). This variable is categorized as follows. 1) civilians (with

[14]Using an 8-way classification instead of a 4-way classification does not alter any of our results. The results are available upon request.

[15]https://www.cia.gov/library/publications/the-world-factbook/fields/2103.html

[16]To construct this measure, we follow the mapping of Besley and Reynal-Querol (2011) of educational attainment into years of time: 1) illiterate (no formal education) = 0 years; 2) literate (no formal education) = 2 years; 3) grade/elementary/primary school or tutors = 6 years; 4) high/finishing/secondary/trade school = 12 years (+6); 5) special training (beyond high school, such as mechanical, nursing, art, music or military training) = 16 (+4) years; 6) college = 16 (+4) years ; 7) graduate or professional school (e.g. masters degree) = 18 years (+2); 8) doctorate (e.g. PhD) = 20 years (+2).

[17]An overview of the NATO coding is reported in Table 8.

no prior military experience); 2) low-ranked officers (from OF-1 to OF-4); 3) middle-ranked officers (from OF-5 to OF-8); and 4) high-ranked officers (OF-9 to OF-10). This variable is, together with the variable *Education*4 the main explanatory variable in our empirical analysis.

As *Education*4 and *Military*4 are categorical variables, we present summary data in a two-way table in Table 1 and test the independence of the two competence dimensions using a χ^2 test. We reject the null-hypothesis of independence at the 1 percent significance level.[18] To further examine the relation between educational and military attainment, we show in Figure 2 the conditional distribution of military attainment for different levels of educational attainment. As educational attainment increases from lower than college to doctorate, the proportion of civilians rises from below 60% to around 95 %. In addition, the proportion of high-rank officers is higher in categories of lower educational attainment. For leaders with college/lower than college education, around 20% have a high-rank military background while leaders with a master or Ph.D. degree, less than 5% has a high military rank. From this, we cannot only conclude that the two competence dimensions are dependent, we can also conclude that they are substitutes.

[Insert Figure 2 about here.]

To test proposition 1, we also require data on winning coalition size and selectorate size. To that end, we follow Bueno de Mesquita and Smith (2010), who have extended the work of Bueno de Mesquita et al. (2003) and construct w (the size of the winning coalition) on the basis of Polity IV data and Banks (2007). It is constructed as follows: 0.25 points are added to w for each of the following conditions that is fulfilled within a country: 1) if the regime type is defined as nonmilitary according to Banks (2007); 2) if the chief executive has not chosen by heredity or in rigged, unopposed elections (i.e. the variable $XRCOMP \geq 2$ according to Polity IV); 3) if there is open executive recruitment (i.e. the variable $XROPEN > 2$ according to Polity IV); and 4) if there is a competitive party system (i.e. the variable, $PARCOMP = 5$ according to Polity IV). As a result, w ranges from 0 to 1.[19] The selectorate size, s, is constructed using Banks (2007)'s legislative selection variable, which is coded zero if there is no legislature, one if the selection is

[18] Pearson chi2(9) = 161.1754, Pr = 0.000.

[19] It should noted that there is not a one to one mapping between the selectorate theory and the proxy at hand (Clarke and Stone, 2008). Yet, Morrow et al. (2008) argue that despite the obvious limitation, the proxies reflect the winning coalition and the selectorate, respectively, in the theoretically predicted direction.

nonelective (as is the case in heredity or ascription), and two if the legislature is elected. Dividing the legislative selection variable by 2 gives a measure for s that is also between 0 and 1. The availability of s and w reduces our sample to 166 countries.

4 Empirical Results

We estimate in Table 3 and Table 4 models similar to Bueno de Mesquita and Smith (2010). Whereas Table 4 relies on specifications using the same control variables as Bueno de Mesquita and Smith (2010), Table 3 excludes the control variables related to economic growth and real income levels per capita. We chose to do so as the sample size almost doubles if we exclude real income per capita and economic growth. That is, whereas the specification that resembles the model of Bueno de Mesquita and Smith (2010) includes 5687 observations, the specification without the economic control variables includes 11197 observations. It should be noted that both samples include as many countries and as many years available.

[Insert Table 3 about here.]

In column 1 of Table 3 we test proposition 1 and include both competence measures in our model. As our proposition predicts that the effect of the competence dimensions depends on the size of the winning coalition, we also interact our competence measures with the proxy for the winning coalition.[20] It can be seen that all of the estimated coefficients regarding competence are of the expected sign. That is, the estimated effect of economic competence on the hazard rate of political leaders is positive, but decreases as the size of the winning coalitions grows. When it amounts to economic competence, the estimated coefficients are also statistically significant. We find, as expected, the opposite effect for military competence, but there the interaction effect is not statistically significant. In columns 2 and 3 we enter the competence variables and their interaction terms sequentially and obtain the same results as in our main specification. We find again that more economic competence increases the hazard rate of incumbent leaders, but the effect is moderated by the size of the winning coalition. As the winning coalition grows, the likelihood of political survival increases. Yet, more military competence does increase political survival. In

[20] It should be noted that in the remainder we concentrate on the sign of the estimated coefficients as well as the statistical significance of particularly the interaction effect. We do not focus on the marginal effect of the competence levels on the hazard rate.

columns 4-6, we evaluate the so-called unconditional effect of competence on the hazard rate. That is, the effect of economic and military competence under the assumption that the winning coalition is extremely small (virtually 0). Also in this case, we find that economic competence is negatively related to political survival, whereas military competence is positively related to political survival, even in the global sample.[21]

The control variables in Table 3 are all highly significant. Indeed, we find that the hazard rate is endogenous to the size of the winning coalition which validates the choice for a Weibull model. Furthermore, we find that small winning coalitions and big selectorates decrease the hazard rate. Bueno de Mesquita and Smith (2010) explain that a larger selectorate implies a lower probability of being part of the winning coalition. Knowing this, members of the selectorate prefer to stick with the incumbent, which implies a lower hazard rate. Naturally, the opposite holds for the size of the winning coalition as, by definition, the probability of being part of the winning coalition is low when the size of the coalition is small. In all our specifications, the age of the incumbent has a positive effect on the hazard rate. As the incumbent grows older, there is a higher probability that he either will die a natural death, or that he will be replaced. Again, this effect is moderated by the size of the winning coalition.

[Insert Table 4 about here.]

In Table 4, we redo our regressions but now we do include control variables related to the economy. These specifications are similar to the baseline model of Bueno de Mesquita and Smith (2010). We find that including these control variables strengthen the evidence in favor of proposition 1. We now not only find evidence in favor of the relation between economic competence (conditional on the size of the winning coalition), but we also find that the impact of military competence (conditional on the size of the winning coalition) is now (highly) significant. We find, in line with our expectation, that higher economic growth decreases the likelihood that the incumbent will be replaced. Yet, there is hardly any evidence that income levels per capita are related to political survival.

In order to improve upon the mapping from theoretical framework to our empirical approach, we split our

[21] Below we show that, in line with our theoretical model, our results are driven by countries that face a revolutionary threat or countries that are autocracies.

sample in different ways. First, we aim to focus on a subset of countries that face a revolutionary threat. To that end, we take the measure as proposed by Bueno de Mesquita and Smith (2010) that captures mass political movements and revolution. Their measure, which is calculated over a three year period consists of mass demonstrations, riots, strikes and revolutions. Second, we use the same variable, but focus on countries that faced sharp increases or decreases in mass civil protest and revolution as some countries may face serious underreporting with respect to issues like mass protest and therefore a relative measure may be more meaningful. Finally, we also distinguish between democracies and autocracies as revolutionary threats may be less likely in democracies than in autocracies. To distinguish between political systems, we rely on the classification by Cheibub et al. (2010).

[Insert Table 5 about here.]

We report in Table 5 on the results when we have splitted our sample on the basis of the the mass civil protest variable. As above, we provide estimates using the model specification of Bueno de Mesquita and Smith (2010) as well as the specification such that our number of observations is maximized. In columns 1-4 we split our sample on the basis of our absolute measure of civil protest and revolution. As our cut-off value, we use the sample median. In columns 5-8, we use our relative measure. There, we distinguish between countries that have faced no changes in the level of protest (this mostly coincidences with (low) levels of protest) and countries that have faced changes in their protest levels. We find that, by and large, the estimates better match the theoretical prediction than the global sample. In Table 6, we do a similar exercise, but differentiate between democracies and autocracies. We find that the estimates are of the right sign and highly significant in the case of autocracies, but not for democracies.

[Insert Table 6 about here.]

To probe the robustness of our results, we provide in Table 7 estimates using alternative measures of economic competence. We have reflected on these alternative measures in the data section. In column 1, we replace our economic competence measure for the measure as proposed by Besley and Reynal-Querol (2011), which is the number of years of schooling that the leader obtained. In columns 2 and 3, we insert educational attainment of the leader relative to the average citizen of the country. In column 2, the average

educational attainment is proxies by the measure of Barro and Lee (2001), while in column 3 we use the measure of Morrisson and Murtin (2012). In column 4, we follow Besley et al. (2011) and insert two dummy variables for educational attainment. The first dummy is equal to one if the leader has at least a college degree, while the second dummy is equal to one if the leader has at least a masters degree. In all cases we find that the constitutive term of educational attainment is positive while the interaction term is negative, which lends support for our hypothesis.

[Insert Table 7 about here.]

As to military attainment, we check for robustness in two ways. First, we treat the NATO classification as a numeric variable (see also the first column of Table 2). Second, we insert dummy variables capturing low-rank officers, middle rank officers and high rank officers. In both cases we find that the estimated coefficients are of the expected sign although the statistical significance is lower than in all previous estimations. One notable exception is the coefficient on high rank officers which suggests that especially high-rank officers are able to secure their position in office.

5 Conclusion

The literature on political survival has shown that many features of the political, economic, and institutional landscape influence the survival of political leaders. In this paper we show that the survival of political leaders also depends on the leader himself (or herself). We have extended the selectorate theory of Bueno de Mesquita et al. (2003) by allowing for heterogenous political leaders regarding their competence levels. By focusing on the motives of the winning coalition, we have derived the proposition that, under a revolutionary threat, economic competence can be detrimental to political survival, but that the effect is moderated by the size of the winning coalition. As the winning coalition grows the negative effect of economic competence on political survival decreases. On the other hand, military competence can increase the chance of political survival. However, again, the effect depends on the size of the winning coalition. Military competence of the political leader is important when the winning coalition is small as the members obtain much private rents and care about maintaining their position in the winning coalition.

Our empirical results by and large confirm the prediction of our model. We conclude that in order to understand political survival of leaders it is insufficient only to look at the economic, political, and institutional context. Personal characteristics of political leaders are also important determinants that contribute to the understanding of political survival. Most interestingly, our results suggest that these personal characteristics interact with the institutional context and that a leader with certain characteristics is more able to survive in one context or another.

Naturally, our study has its limitations. For instance, our model assumes that the country under investigation suffers from a revolutionary threat. This implies that the model is representative for only a subset of all countries and that it does not apply to stable democracies. For stable democracies, one could argue that military competence is less relevant and that other forms of competence play a role to win the support of the winning coalition. One could think of political competence, e.g., how well a politician can run a political campaign or how well he is able to manage a (coalition) government. Another limitation relates to the measurement of our competence variables, especially military competence. Using military ranks, based on the NATO classification system, is a crude way to proxy for the latent concept of military competence. It may well be that in autocracies higher military ranks resemble the fact that someone belongs to the right network (which is analogous to the argument with respect to political competence in democracies). It may also well be that non-commissioned officers with battlefield experience (i.e. Sergeants) outperform commissioned officers that mainly received academic training. We believe, however, that such cases are rare and that our approach is a feasible way to make a comparative analysis possible. Of course, reflecting on empirical results that we would have obtained when better proxies would have been available is highly speculative. Perhaps it is no surprise that the strongest results are found for economic competence, which we regard as the better proxy. Improving upon measurement issues and developing a framework that is also able to understand political survival in stable democracies set a natural agenda for further research.

6 Appendix

6.1 Proof of Proposition

To prove the proposition, we discuss the value of $\frac{\partial d}{\partial e_0}$ and how it is moderated by w, i.e. the value of $\frac{\partial^2 d}{\partial e_0 \partial w}$. The derivative, $\frac{\partial d}{\partial e_0}$, is:

$$\frac{\partial d}{\partial e_0} = 3\alpha(1-x)(\frac{1}{2}+\frac{x}{w}-\frac{x}{2})e_0^2 - 2(1-k)\left(1-x+\frac{x}{w}\right)\alpha e_0 + 1 - x + \frac{x}{w} + \frac{1}{2}\alpha(1-k)^2 \tag{7}$$

The equation above shows that $\frac{\partial d}{\partial e_0}$ is a U-shape function of e_0, which is positive when e_0 equals zero. For the proposition to be true, we need the smaller root of $\frac{\partial d}{\partial e_0} = 0$ to be in the range of 0 and 1, which requires $\frac{\partial d}{\partial e_0}[e_0 = 1]<0$. This inequality puts restrictions on the value ranges of the exogenous parameters, x, k, w and α. The restrictions are: 1) income inequality is high, i.e., a large share of output is devoted to private rents (x is sufficiently high), 2) income levels are low, i.e., revolution costs are small (k is near zero), 3) the country is a fragile autocratic state, i.e., the size of the winning coalition is small (w is small) and 4) the economic and military competence level of the leader are negatively correlated (α is sufficiently high, which holds as shown in our data section). The required conditions depict a typical country facing a threat of revolution.

To inspect how $\frac{\partial d}{\partial e_0}$ evolves with repect to w, we calculate the second derivative:

$$\frac{\partial^2 d}{\partial e_0 \partial w} = -\frac{x}{w^2}(3\alpha(1-x)e_0^2 - 2\alpha(1-k)e_0 + 1) \tag{8}$$

$\frac{\partial^2 d}{\partial e_0 \partial w}$ is an inverted U-shape function of e_0 and has a negative value when e_0 is zero. Since this function reaches its global maximum out of the value range of e_0, it will cross the x-axis once for $e_0 \in [0,1]$ if $x > \frac{1}{3} + \frac{2}{3}k + \frac{1}{3\alpha}$. When e_0 lies to the right of the intersection between $\frac{\partial^2 d}{\partial e_0 \partial w}$ and the x-axis, $\frac{\partial^2 d}{\partial e_0 \partial w}$ turns from negative to positive. Furthermore, for the value of e_0 where $\frac{\partial d}{\partial e_0}$ turns from positive to negative, $\frac{\partial^2 d}{\partial e_0 \partial w}$ is strictly positive, which proves the proposition.

[Insert Figure 3 about here.]

To elaborate on the restrictions of the exogenous parameters that are required for the proposition to hold, we provide a numerical example and plot it in Figure 3 to show how $\frac{\partial d}{\partial e_0}$ and $\frac{\partial^2 d}{\partial e_0 \partial w}$ behave. We set w equal to 0.01. This is a conservative value as, for example, in the former Soviet Union, the ratio of 14 Politburo members over the whole populace is much smaller than 0.01. Furthermore, we set x to be 0.95, which means that only 5 percent of the aggregate output is used to produce public goods. We further assign α to be 0.9, which implies that economic competence and military competence are (negatively) correlated. Lastly, k is set to be 0.001 so that revolution costs are sufficiently low, i.e., the opposition has little to lose when they decide to revolt. For these parameter values, we find that $\frac{\partial d}{\partial e_0}$ turns negative when e_0 gets higher than 0.584, and $\frac{\partial^2 d}{\partial e_0 \partial w}$ is positive when $\frac{\partial d}{\partial e_0}$ is negative.

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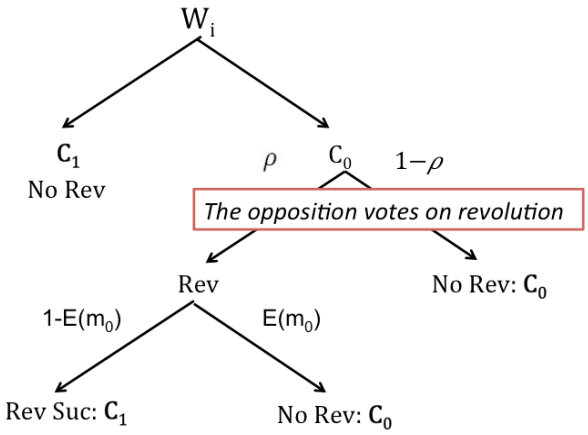

Figure 1: Game Tree

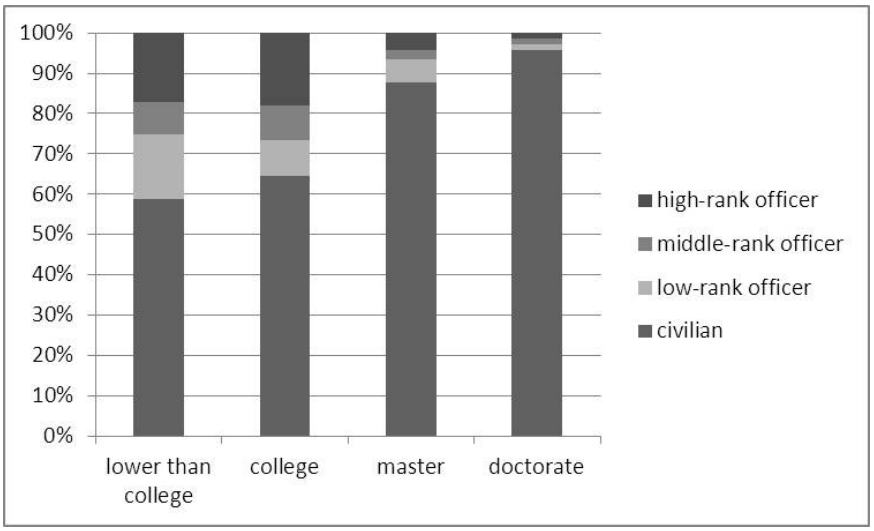

Figure 2: The distribution of military ranks for different education attainments

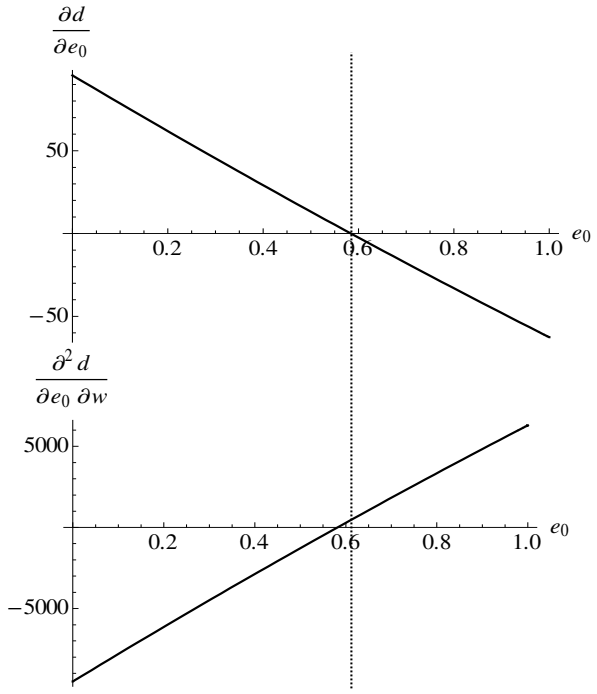

Figure 3: Numerical example

Table 1: Two-Way Table: Education Attainment and Military Attainment

Education attaiment	Lower than college	College	Master	Doctorate	
Military attainment	(Education=0)	(Education=1)	(Education=2)	(Education=3)	Total
Civilian	258	467	292	301	1218
(Military rank=0)	(312.7)	(515.7)	(237.2)	(152.4)	(1218.0)
Low-rank officer	70	65	19	4	158
(Military rank=1)	(40.6)	(66.9)	(30.8)	(19.8)	(158.0)
Middle-rank officer	36	62	8	5	111
(Military rank=2)	(28.5)	(47.0)	(21.6)	(13.9)	(111.0)
High-rank officer	75	130	14	4	223
(Military rank=3)	(57.2)	(94.4)	(43.4)	(27.9)	(223.0)
Total	439	724	333	314	1710

Pearson chi2(9) = 161.1754, Pr = 0.000.
Expected counts are reported in parentheses.

Table 2: Ranks of NATO Army Officers

NATO Code	**UK**	**US**	**FR**
OF-10	Field Marshal	General of the Army	Marechal de France
OF-9	General	General	General d'Armree
OF-8	Lieutenant- General	Lieutenant- General	General de Corps d'Armree
OF-7	Major-General	Major-General	General de Division
OF-6	Brigadier	Brigadier-General	General de Brigade
OF-5	Colonel	Colonel	Colonel
OF-4	Lieutenant-Colonel	Lieutenant-Colonel	Lieutenant-Colonel
OF-3	Major	Major	Commandant
OF-2	Captain	Captain	Capitaine
OF-1	Lieutenant Second Lieutenant	First Lieutenant Second Lieutenant	Lieutenant Sous-Lieutenant

Source: STANAG 2116 NATO chart
(http://en.wikipedia.org/wiki/Ranks_and_insignia_of_NATO_armies_officers)

Table 3: Education Attainment, Military Attainment and Leader Survival

		(1)	(2)	(3)	(4)	(5)	(6)
_t	Education4	0.465***	0.500***		0.153***	0.164***	
		(0.096)	(0.094)		(0.032)	(0.031)	
	w*Education4	-0.453***	-0.495***				
		(0.121)	(0.121)				
	Military4	-0.147**		-0.180**	-0.061**		-0.094***
		(0.068)		(0.072)	(0.031)		(0.030)
	w*Military4	0.183		0.172			
		(0.127)		(0.137)			
	w	2.645***	2.904***	1.664***	2.252***	2.376***	1.757***
		(0.690)	(0.661)	(0.622)	(0.617)	(0.618)	(0.592)
	s	-0.601***	-0.568***	-0.382***	-0.489***	-0.483***	-0.350**
		(0.143)	(0.134)	(0.143)	(0.140)	(0.137)	(0.137)
	Age	0.037***	0.038***	0.033***	0.039***	0.039***	0.034***
		(0.007)	(0.007)	(0.006)	(0.006)	(0.006)	(0.006)
	w*Age	-0.039***	-0.040***	-0.033***	-0.041***	-0.042***	-0.033***
		(0.011)	(0.011)	(0.010)	(0.010)	(0.010)	(0.010)
	Constant	-3.110***	-3.360***	-2.273***	-2.984***	-3.109***	-2.377***
		(0.410)	(0.375)	(0.365)	(0.353)	(0.345)	(0.338)
ln_p	w	0.500***	0.484***	0.625***	0.529***	0.524***	0.616***
		(0.141)	(0.137)	(0.115)	(0.129)	(0.129)	(0.113)
	Constant	-0.567***	-0.554***	-0.723***	-0.590***	-0.587***	-0.715***
		(0.078)	(0.075)	(0.063)	(0.070)	(0.070)	(0.062)
	Obs	11,197	11,197	12,032	11,197	11,197	12,032
	Log Lik	-3408	-3413	-4258	-3426	-3429	-4261
	Ncountry	165	165	166	165	165	166
	Nsubject	2143	2143	2540	2143	2143	2540
	Nfailure	1807	1807	2182	1807	1807	2182

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Table 4: Education Attainment, Military Attainment, Leader Survival and Economic Conditions

		(1)	(2)	(3)	(4)	(5)	(6)
_t	Education4	0.424***	0.524***		0.087**	0.099**	
		(0.115)	(0.107)		(0.041)	(0.041)	
	w*Education4	-0.478***	-0.606***				
		(0.151)	(0.142)				
	Military4	-0.293***		-0.381***	-0.082		-0.108**
		(0.096)		(0.094)	(0.050)		(0.049)
	w*Military4	0.445***		0.542***			
		(0.154)		(0.153)			
	w	1.119	2.214**	-0.025	1.318	1.699	0.881
		(1.116)	(1.043)	(1.101)	(1.049)	(1.041)	(1.088)
	s	-1.131***	-1.088***	-0.997***	-1.007***	-1.005***	-0.922***
		(0.169)	(0.167)	(0.179)	(0.176)	(0.174)	(0.179)
	Age	0.038***	0.040***	0.038***	0.042***	0.043***	0.040***
		(0.009)	(0.010)	(0.009)	(0.009)	(0.010)	(0.009)
	w*Age	-0.042***	-0.042***	-0.042***	-0.044***	-0.046***	-0.042***
		(0.013)	(0.013)	(0.013)	(0.013)	(0.014)	(0.013)
	Ln(GDPpc)	-0.110	-0.070	-0.143	-0.097	-0.088	-0.100
		(0.096)	(0.089)	(0.104)	(0.095)	(0.092)	(0.098)
	w*Ln(GDPpc)	0.228*	0.162	0.266*	0.173	0.157	0.193
		(0.128)	(0.120)	(0.138)	(0.123)	(0.122)	(0.132)
	Growth	-0.022***	-0.025***	-0.022***	-0.030***	-0.031***	-0.025***
		(0.006)	(0.007)	(0.006)	(0.006)	(0.006)	(0.006)
	w*Growth	0.010	0.014	0.009	0.022	0.024	0.014
		(0.016)	(0.016)	(0.015)	(0.016)	(0.016)	(0.015)
	Constant	-2.009***	-2.885***	-1.054	-2.213***	-2.508***	-1.802***
		(0.669)	(0.609)	(0.647)	(0.616)	(0.602)	(0.630)
ln_p	w	0.490***	0.452***	0.608***	0.494***	0.487***	0.583***
		(0.118)	(0.115)	(0.105)	(0.114)	(0.115)	(0.102)
	Constant	-0.474***	-0.443***	-0.612***	-0.483***	-0.476***	-0.593***
		(0.084)	(0.083)	(0.077)	(0.083)	(0.083)	(0.075)
	Obs	5,687	5,687	5,818	5,687	5,687	5,818
	Log Lik	-1547	-1555	-1736	-1565	-1568	-1748
	Ncountry	150	150	150	150	150	150
	Nsubject	1039	1039	1123	1039	1039	1123
	Nfailure	930	930	1010	930	930	1010

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

Table 5: Presence and Absence of A Revolutionary Threat

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
		<=Med(mass)	>Med(mass)	<=Med(mass)	>Med(mass)	△ mass= 0	△ mass≠ 0	△ mass= 0	△mass≠ 0
_t	Education4	0.470**	0.327***	0.552***	0.164	0.474***	0.406***	0.526***	0.309**
		(0.184)	(0.110)	(0.187)	(0.128)	(0.172)	(0.106)	(0.182)	(0.130)
	w*Education4	-0.452**	-0.393**	-0.605**	-0.214	-0.426*	-0.475***	-0.549**	-0.374**
		(0.228)	(0.161)	(0.238)	(0.194)	(0.223)	(0.136)	(0.239)	(0.170)
	Military4	0.087	-0.380***	0.188	-0.497***	0.096	-0.363***	-0.092	-0.418***
		(0.145)	(0.089)	(0.191)	(0.104)	(0.151)	(0.091)	(0.221)	(0.108)
	w*Military4	0.038	0.456***	-0.085	0.597***	-0.025	0.419**	0.281	0.544***
		(0.217)	(0.156)	(0.283)	(0.168)	(0.243)	(0.169)	(0.343)	(0.172)
	w	3.107**	3.002***	3.135	2.406*	2.257*	2.932***	0.153	1.952
		(1.219)	(0.829)	(2.144)	(1.330)	(1.275)	(0.770)	(2.454)	(1.214)
	s	-0.037	-0.980***	0.368	-1.156***	-0.278	-0.866***	-0.383	-1.136***
		(0.326)	(0.137)	(0.454)	(0.153)	(0.367)	(0.137)	(0.480)	(0.167)
	Age	0.032**	0.034***	0.015	0.045***	0.021	0.037***	0.016	0.042***
		(0.014)	(0.008)	(0.015)	(0.010)	(0.015)	(0.008)	(0.016)	(0.010)
	w*Age	-0.030	-0.046***	-0.008	-0.059***	-0.020	-0.045***	-0.014	-0.050***
		(0.019)	(0.014)	(0.020)	(0.017)	(0.020)	(0.012)	(0.021)	(0.016)
	Ln(GDPpc)			0.327**	-0.077			0.017	-0.078
				(0.142)	(0.108)			(0.161)	(0.107)
	w*Ln(GDPpc)			-0.222	0.117			0.156	0.134
				(0.206)	(0.131)			(0.230)	(0.129)
	Growth			0.004	-0.024***			-0.003	-0.025***
				(0.019)	(0.007)			(0.022)	(0.007)
	w*Growth			-0.025	0.019			0.015	0.026
				(0.028)	(0.021)			(0.041)	(0.020)
	Constant	-4.628***	-2.319***	-6.068***	-1.934**	-3.425***	-2.603***	-2.809*	-2.078***
		(0.856)	(0.495)	(1.445)	(0.793)	(0.961)	(0.462)	(1.621)	(0.751)
ln_p	w	0.756***	0.062	0.743***	0.116	0.779***	0.286	0.794***	0.270*
		(0.173)	(0.167)	(0.169)	(0.153)	(0.202)	(0.185)	(0.208)	(0.151)
	Constant	-0.710***	-0.215**	-0.678***	-0.196**	-0.774***	-0.375***	-0.772***	-0.262***
		(0.136)	(0.092)	(0.139)	(0.091)	(0.168)	(0.100)	(0.179)	(0.096)
	Obs	4,730	3,400	3,277	2,329	3,779	4,658	2,420	2,985
	Log Lik	-934.2	-1198	-696.1	-751.4	-780.4	-1597	-507.3	-892.4
	Ncountry	163	158	150	144	160	160	142	144
	Nsubject	1004	1168	748	807	921	1382	598	859
	Nfailure	520	721	427	497	426	936	304	590

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Table 6: Dictatorship and Democracy

		(1) Dictatorship	(2) Democracy	(3) Dictatorship	(4) Democracy
_t	Education4	0.590***	-0.309	0.414***	-0.142
		(0.139)	(0.235)	(0.149)	(0.266)
	w*Education4	-0.709**	0.326	-0.513	0.097
		(0.293)	(0.277)	(0.316)	(0.322)
	Military4	-0.379***	0.032	-0.405***	0.146
		(0.104)	(0.294)	(0.120)	(0.307)
	w*Military4	0.752***	0.006	0.738***	-0.147
		(0.228)	(0.379)	(0.276)	(0.399)
	w	2.490	-0.132	-1.907	1.786
		(1.692)	(1.669)	(2.527)	(2.902)
	s	-1.011***	11.959***	-1.224***	11.909***
		(0.182)	(0.630)	(0.208)	(1.077)
	Age	0.039***	0.018	0.065***	-0.019
		(0.011)	(0.022)	(0.012)	(0.027)
	w*Age	-0.039	-0.019	-0.085***	0.025
		(0.030)	(0.025)	(0.032)	(0.032)
	Ln(GDPpc)			-0.410***	0.504*
				(0.122)	(0.272)
	w*Ln(GDPpc)			1.009***	-0.543*
				(0.252)	(0.324)
	Growth			-0.017**	0.063
				(0.009)	(0.052)
	w*Growth			-0.020	-0.082
				(0.042)	(0.062)
	Constant	-3.236***	-13.124***	-1.588*	-15.027***
		(0.649)	(1.521)	(0.885)	(2.657)
ln_p	W	-0.531**	0.334	-0.394	0.405
		(0.268)	(0.270)	(0.294)	(0.257)
	Constant	-0.134	-0.293	-0.135	-0.300
		(0.101)	(0.238)	(0.111)	(0.236)
	Obs	4,517	3,387	3,006	2,681
	Log Lik	-790.9	-1249	-501.3	-941.6
	Ncountry	124	98	109	92
	Nsubject	591	885	415	705
	Nfailure	407	783	291	639

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 7: Different Measures for Education Attainment and Military Attainment

		(1)	(2)	(3)	(4)	(5)	(6)	(7)
_t	Education years	0.093***						
		(0.019)						
	w*Education years	-0.069**						
		(0.028)						
	Education distance (BL)		0.056*					
	(BL: Barro and Lee (2001))		(0.030)					
	w*Education distance (BL)		-0.086**					
			(0.042)					
	Education distance (MM)			0.048*				
	(MM: Morrisson and Murtin (2010))			(0.025)				
	w*Education distance (MM)			-0.044				
				(0.033)				
	>=College				0.619***			
					(0.171)			
	>=Master				0.645***			
					(0.210)			
	w*>=College				-0.284			
					(0.262)			
	w*>=Master				-0.774***			
					(0.262)			
	NATO rank (OF 0-10)					-0.064***		
						(0.022)		
	w*NATO rank (OF 0-10)					0.069*		
						(0.040)		
	College						0.619***	
							(0.171)	
	Master						1.284***	
							(0.239)	
	Doctorate						1.237***	
							(0.339)	
	w*College						-0.284	
							(0.262)	
	w*Master						-1.047***	
							(0.312)	
	w*Doctorate						-1.086**	
							(0.429)	
	Low-rank officer							-0.027
								(0.222)
	Middle-rank officer							-0.186
								(0.247)
	High-rank officer							-0.596***
								(0.209)
	w*Low-rank officer							-0.082
								(0.363)
	w*Middle-rank officer							0.432
								(0.514)
	w*High-rank officer							0.530
								(0.373)
	w	3.540***	3.209***	2.657***	2.710***	1.668***	2.697***	1.755***
		(0.792)	(1.008)	(0.886)	(0.659)	(0.621)	(0.658)	(0.635)
	s	-0.568***	-1.133***	-0.515***	-0.573***	-0.390***	-0.573***	-0.378***
		(0.128)	(0.210)	(0.183)	(0.132)	(0.143)	(0.132)	(0.143)
	Age	0.040***	0.035***	0.039***	0.037***	0.034***	0.037***	0.034***
		(0.007)	(0.011)	(0.010)	(0.007)	(0.006)	(0.007)	(0.006)
	w*Age	-0.043***	-0.030**	-0.038***	-0.039***	-0.033***	-0.039***	-0.034***
		(0.010)	(0.014)	(0.013)	(0.011)	(0.010)	(0.011)	(0.010)
	Constant	-4.348***	-3.911***	-3.684***	-3.418***	-2.273***	-3.420***	-2.361***
		(0.479)	(0.749)	(0.594)	(0.383)	(0.361)	(0.382)	(0.372)

Table 8: Summary of descriptive statistics

Variable	Definition	Source	Obs	Mean	S.D.	Min	Max
Education	Education attainment of the incumbent before office	various sources	11197	1.05	0.97	0	3
Military rank	The highest military rank achieved before office	various sources	12032	0.67	1.11	0	3
w	The size of the winning coalition	Bueno de Mesquita and Smith (2010)	12097	0.58	0.300	0	1
s	The size of the selectorate	Bueno de Mesquita and Smith (2010)	12097	0.86	0.33	0	1
Age	Age of the incumbent	Archigos	12097	55.47	11.72	15	93
Ln(GDPpc)	GDP per capita in 14 logarithms	World Development Indicator	5956	7.41	1.54	4.28	10.91
Growth	Annual GDP growth rate	World Development Indicator	5931	3.65	6.34	-50.25	106.28
mass	$mass_t$ is a measure of the revolution threat based upon the occurence of mass political movements.	Bueno de Mesquita and Smith (2010)	9196	0.08	0.75	-0.37	4.66
$\triangle$mass	The change in the level of mass over the previous three years, i.e. $mass_t - mass_{t-3}$.	Bueno de Mesquita and Smith (2010)	8437	0.01	0.81	-3.99	4.32
Nontax revenue	The percentage of nontax government revenue over GDP	World Development Indicator	2207	8.44	9.31	-11.27	156.76
Oil	The percentage of next oil exports over GDP for net oil exporters and zero for net importers	World Development Indicator	4108	2.54	8.43	0	78.07
Aid	Official Development Assistance in terms of percentage of GDP	World Development Indicator	4755	5.74	8.73	-0.75	94.41
Education years	the number of years the incumbent received education	World Development Indicator	11197	14.31	4.95	0	20
Education distance (BL)	the number of years the incumbent received education relative to that of the average citizen of the country	Barro and Lee (2001)	4918	11.67	4.45	-5.18	20
Education distance (MM)	the number of years the incumbent received education relative to that of the average citizen of the country	Morrisson and Murtin (2012)	6532	10.46	4.92	-6.76	19.72
NATO rank (OF 0-10)	The highest military rank achieved before office (NATO-system)	various sources	12032	1.89	3.51	0	10