

**Who Wins, Who Loses, Who Negotiates Peace in Civil Wars:  
Does Regime Type Matter?**

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## **Abstract**

Previous research has shown that the outcome of a civil war is related to conflict duration: military victory by either the government or the rebels occurs early if it occurs at all, and the longer a civil war lasts, the more likely it is to end in a negotiated settlement. The models of civil war duration and outcome that have produced these findings are built on characteristics of the civil war and less on attributes of the state itself, other than where the state lies on the Polity autocracy-democracy scale. We propose that the risk of government victory versus negotiated settlement varies not only between democracies versus authoritarian regimes but across the different authoritarian regime types as identified by Geddes, Wright, and Franz. The distinguishing attributes of these regime types – democracy, one-party, personalist, military, monarchical – result in variation across regime types in their ability to defeat a rebel movement, their vulnerability to being defeated by such a movement, and their willingness and ability to negotiate a peace agreement with rebel movements. Results from a series of competing risk models using the Uppsala-PRIO Armed Conflict Dataset demonstrate that how civil wars end is partly a function of the characteristics of the regime.

## **Who Wins, Who Loses, Who Negotiates Peace in Civil Wars: Does Regime Type Matter?**

Research on how civil wars end has identified a number of characteristics of the civil war nation and of the conflict itself that affect whether the conflict will end in government victory, rebel victory, or a negotiated peace agreement (Mason and Fett 1996; Mason, Weingarten and Fett 1999; DeRouen and Sobek 2004; Brandt et al. 2008). Within this body of research, studies have identified discrete attributes of the regime itself that affect the duration and outcome of civil wars. Among these attributes are the quality of state institutions – i.e., whether it is a democracy, autocracy, or some anocratic hybrid of weak authoritarianism or partial democracy – the bureaucratic capacity of the state, and the state’s military capacity (DeRouen and Sobek 2004; Balch-Lindsey, Enterline, and Joyce 2008; Mason and Fett 1996; Mason, Weingarten and Fett 1999; Brandt et al. 2008).

In this study we explore empirically whether the likelihood of a civil war ending in government victory, rebel victory, or a negotiated settlement varies across regime types. We use Geddes, Wright, and Frantz’s (2012) authoritarian regime type dataset that categorizes non-democratic regimes as either one-party, personalist, military, or monarchical regimes. When combined with a “democracy” category, the typology is exhaustive and mutually exclusive: all states are categorized as one and only one regime type in each year of their existence.

Each of these regime types is defined by a syndrome of state characteristics that includes where they lie on the discrete measures of state capacity (alluded to above) that previous studies have identified as affecting the duration and outcome of civil wars. Among these are the institutional

configuration of the state (i.e., where it lies on the Polity IV democracy-autocracy scale), the characteristics of the nation's leader or coalition of leaders, the relationship between the leader and his/her inner circle (i.e., winning coalition), and the pattern of state-society relations. The rationale for using regime type categories is that each of these regime types represents a particular syndrome of those discrete measures of state capacity found in previous works, and as Hendrix's (2010) work suggests, there is less variation on those state capacity measures within a given regime type than there is between regime types. In short, to the extent that state capacities are correlated with each other (which Hendrix seems to suggest), there is reason to expect that, all else being equal, the probability of a civil war ending in a government victory versus a rebel victory versus a negotiated settlement should vary across regime types. This expectation is reinforced by the theoretical arguments and empirical findings by Gurses and Mason (2010) and Fjelde (2010) on how, different regime types manifest differing degrees of susceptibility to armed rebellion. Similarly, Mason and Greig (2017) find that the capacity of the post-civil war regime to sustain the peace rather than relapse into renewed conflict also varies across these regime types. Davenport (2007) has shown that the propensity of the state to respond to opposition challenges with repressive violence also varies systematically across these regime types. By the same logic, regime types should also vary systematically in terms of their ability to prevail over rebels, their risk of being defeated by them, or their willingness and ability to negotiate a peace agreement to end an on-going civil war.

In the next section, we review the literature on civil war termination and outcomes. We then present a theory of how regime type – treated as fairly discrete clusters of state capacities and attributes – should affect the outcome of civil wars by defining the capacity of the state to defeat

a rebel movement or be defeated by it, or, alternatively, its willingness and ability to negotiate a peace agreement. We test hypotheses derived from this theory with a series of competing risk models using the Uppsala-PRIO Armed Conflict Dataset.

### **How Civil Wars End**

Most studies of civil war duration and outcome are grounded in a rationalist framework that depicts the termination of civil war as an iterated choice both governments and rebels face between continuing to fight in the quest for victory (or a more favorable peace agreement) or quitting the fight either in defeat or (if both sides agree to stop at the same time) in order to negotiate a peace agreement that ends the war (see Brandt et al. 2008; Mason, Weingarten, and Fett 1998; Mason and Fett 1996; DeRouen and Sobek 2004). Each actor in a civil war dyad – the government and a rebel group – must continuously update its estimates of the expected payoff from continuing to fight, conceding defeat, or seeking a negotiated settlement. If both sides choose to continue fighting, the conflict endures. If the rebels continue to fight while the government quits, the rebels win, and they take over control of the regime. If the rebels quit and the government continues to fight, the government wins and the political status quo ante is preserved. If both agree to stop fighting at the same point in time, the cease fire provides them with an opportunity to negotiate a permanent peace agreement that ends the armed conflict by establishing the framework of a new post-conflict order that is acceptable to both actors.

Mason and Fett (1996) depict the choice between continuing to fight or quitting as a function of each actor's estimate of (1) the payoffs from victory ( $U_v$ ) versus the costs of defeat ( $U_d$ ), (2) the probability of victory versus defeat ( $P_v$  versus  $(1-P_v)$ ), (3) the rate at which they will have to absorb

the costs of conflict ( $C$ ) from the present ( $t_0$ ) until that time in the future when s/he estimates s/he will be able to achieve victory ( $t_v$ ). For an actor to prefer to negotiate a peace agreement rather than continue the conflict, this expected utility from continuing to fight ( $EU_c$ ) must be less than the actor's estimate of the expected utility from a negotiated settlement ( $EU_{ns}$ ). While the payoffs from victory would always be greater than the payoffs from a negotiated settlement, when a conflict reaches the stage of being a mutually hurting stalemate, both actors may conclude that they would be better off negotiating a peace agreement now rather than continuing to absorb the costs of conflict until that time in the future when they estimate they may be able to achieve victory. As the costs of conflict continue to accrue and the course of the conflict compels both sides to adjust downward their probability of victory and adjust upward the time required to achieve victory (and, therefore, the accumulated costs of victory), any anticipated future victory will begin to appear pyrrhic, and the alternative of a negotiated settlement will begin to appear more attractive.

This framework implies that any factor that (1) decreases an actor's estimate of the probability of victory, (2) decreases that actor's estimate of the payoffs from victory, (3) increases the rate at which that actor will have to absorb costs in order to achieve victory, or (4) extends that actor's estimate of the time required to achieve victory should make that actor more willing to seek a negotiated settlement rather than continue to fight. Among the more consistent findings supporting this logic is that the longer a civil war lasts, the less likely it is to end in a decisive victory for either the government or the rebels, and the more likely it is to end in a negotiated settlement (Mason, Weingarten and Fett 1999; DeRouen and Sobek 2004; Brandt et al. 2008). Brandt et al. (2008) found that government victories occur early in the conflict, when the government has its greatest

military advantage over a nascent rebel movement. Bapat (2005) presents similar findings, adding that if rebel movements can survive that early phase (about four years), they are likely to survive into the future. One finding that conflicts with the rationalist logic concerns the costs of conflict variable. The model implies that more deadly conflicts – those with a higher casualty rate – should end sooner because the costs of continuing to fight more quickly approach any potential payoffs from victory. However, Brandt et al. (2008) found that higher casualty rates are actually associated with longer conflict duration. Perhaps higher costs intensify credible commitment problems that make it difficult for protagonists to negotiated a peace agreement even when both would prefer that outcome to continued conflict: the deadlier the war has been, the more either actor stands to lose if they commit to a peace agreement while their rival defects in order to achieve by deception what they could not achieve on the battlefield.

Existing works on civil war duration and outcome use characteristics of the civil war nation (e.g., level of economic development, ethnic divisions) and of the conflict itself (e.g., its duration, its deadliness, and whether it is fought over control of territory or government) as proxies for the parameters in the decision calculus. Most of these studies also include discrete measures of state capacity as predictors of the probability of rebel or government victory. DeRouen and Sobek (2004) find that greater state military capacity is associated with a lower probability of rebel victory but not necessarily a greater probability of government victory. Likewise, their measure of state bureaucratic capacity – the ability of the state to deliver public goods and services – is also negatively related to the risk of rebel victory. Mason et al. (1999) and Brandt et al. (2008) did find that the size of the government’s army is positively related to the probability of government



victory.

These inconsistent findings on the relationship between various measures of state capacity and the duration and outcome of civil wars could be a function of the various discrete measures being treated as if they are largely independent of each other when it is unlikely that they are. To be sure, state capacity is a complex and multidimensional concept. It includes a number of dimensions ranging from GDP/capita (Fearon and Laitin, 2003) to some variant of the Polity IV autocracy-democracy scale (Hegre et al. 2001; Vreeland 2008). As Gleditsch and Ruggeri (2010, 299) point out, these measures are only loosely related to the underlying theoretical concept of state capacity, and many (e.g., GDP per capita) have been used as indicators for other concepts (such as grievances) that have been proposed as causal antecedents of civil war onset.

Hendrix (2010) highlights three major dimensions of state-capacity used in existing literature: military capacity, bureaucratic administrative capacity, and the quality and coherence of state institutions. A factor analysis of fifteen measures of state capacity shows that this “bundle of qualities” clusters into three dimensions: (1) *rational legality*, which captures bureaucratic and administrative capacity, (2) *rentier-autocraticness*, and (3) *neopatrimoniality*.<sup>1</sup> These three dimensions correspond to syndromes of regime characteristics that others have conceptualized as non-democratic “regime types”, and they match rather closely to Geddes, Wright and Frantz’s (2012) regime type categories. We argue that these dimensions of state capacity make certain outcomes more likely in certain regimes. As shown in Figure 1, various levels of state capacity

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<sup>1</sup> Also matches with Bil’s (1991, Ch. 3), Bueno de Mesquita et al.’s (2003, 69), and Linz and Stepan’s (1996) typologies of regime types.

that correspond to regime-types influence the decision making among state actors during a civil war on whether to continue fighting, concede defeat, or seek a negotiated settlement.

Below we describe the attributes of the different regime types and then examine how these characteristics impact civil war outcomes. We propose that, all else equal, the calculus of whether or not a regime should continue to fight, cede defeat, or seek a negotiated settlement will vary with regime type. In particular, different regime types have differing levels of capacity to sustain fighting for a protracted period. The ability of a regime to negotiate a peace agreement should also vary across regime type in that the ability of a regime to resolve the credible commitment problems that are a barrier to peace agreements will vary depending on whether the regime is a democracy, a one party regime, a military regime, or a personalist dictatorship. Incumbents' estimate of how well they can compete for power in the post-war order established by a peace agreement should also vary across regime type and affect their willingness to negotiate a peace agreement.

[Figure 1 here]

### **Non-Democratic Regime Types**

A number of studies use a variant of the 21-point Polity IV democracy-autocracy scale as a measure of the quality of governance and/or regime type. However, those studies differ with respect to their expectations regarding whether democracies are more or less likely than authoritarian regimes to prevail or be defeated in a civil war. Some argue that democratic leaders may be more sensitive to mounting casualties than are autocratic leaders and, therefore, democratic leaders may more constrained in their use of force against armed opposition movements, making democracies less likely to defeat an insurgency and more likely to negotiate a peace agreement

rather than continue to fight (Bapat 2005). Most studies agree that regimes in the middle of the autocracy-democracy scale – weak authoritarian regimes and partial democracies, or, collectively, “anocracies”– are more likely to experience civil war than are either fully autocratic or fully democratic states. However, findings on variations in the duration and outcome of civil wars across autocracies versus anocracies versus democracies are rare. Brandt et. al (2008) found that the risk of government victory was lower and rebel victory higher in anocracies than in either democracies or autocracies and that the risk of a negotiated settlement was greatest in democracies (compared to non-democracies).

Geddes (1999) argues that different types of authoritarian regimes differ from each other as much as they differ from democracies. As such, a measure of regime type that arrays states along a unidimensional autocracy-democracy scale may not effectively capture these variations in regime type. Each regime type draws on different groups to staff government offices and different segments of society as their support base. They have different procedures for making policy decisions and different ways of choosing leaders and managing leadership succession. And they have different ways of responding to demands from society and to challenges from opposition groups. It would be difficult to capture all of these differences with a series of discrete measures for each or with a unidimensional autocracy-democracy scale. Therefore, it seems appropriate to use regime types as measures of different syndromes of state capacities that have real-world referents.

Geddes lists four distinct types of non-democratic regimes in the latest version of the dataset (Geddes, Wright, & Frantz, 2014). *Single party regimes* are defined as states “in which the party

has some influence over policy, controls most access to political power and government jobs, and has functioning local-level organizations.” This type corresponds to Goodwin and Skocpol’s (1989) “inclusionary authoritarian regimes” and includes state-socialist regimes such as Cuba and China as well as corporatist one-party regimes such as Mexico and Taiwan before their transitions to democracy in the 1990s (see Linz and Stepan 1996, 40-42).

*Military regimes* are governed by an officer or retired officer, with the support of the military establishment. Military regimes have routine mechanisms for high level officers to influence policy choice and appointments, with these processes based in the command bureaucracy of the military as an institution (Geddes, 1999). This regime type corresponds to O’Donnell’s “bureaucratic authoritarian” regime. What distinguishes these regimes from personalist dictatorships is, first, the military as an institution is more professionalized than its counterpart in a personalist regime. Second, the command structure is more formalized along bureaucratic lines, and the ranks are staffed on the basis of merit rather than personal loyalty to the dictator.

A *personalist regime* is defined as a state in which a single leader has consolidated control over policy-making and recruitment, in the process marginalizing other elites and subordinating them to his claims to power. Goodwin and Skocpol (1989) label this type of regime “exclusionary authoritarian” while others term them “neopatrimonial dictatorships” (Bratton and Van de Walle 1994; Snyder 1992) or “sultanistic regimes” (Linz and Stepan 1996). Typically, personalist dictators come to power through a military coup or the revolutionary overthrow of another regime. In some cases personalist regimes evolve out of one-party or military regimes, as one leader gradually chips away at the institutional constraints on the chief executive’s exercise of power.

Finally, in *monarchies* political power is endowed in a single individual. Unlike personalist regimes, monarchies have an institutionalized mechanism (heredity) for leadership succession, and the death of a leader is less likely to generate the crisis of succession that often destabilizes personalist regimes. Otherwise, monarchies have much more in common with personalist regimes than any other regime type. As noted by Geddes et al. (2014, 326), both types of leaders are likely to face death, exile, or arrest after their regimes end. Since, the number of monarchical regimes is very small, we merge monarchies with personalist regime in our main analysis. Isolating monarchies, however, does not substantially alter any of our main findings presented later. The results with monarchies as a separate regime type from personalist regime are presented in the online appendix.

### **Regime Type and Civil War Outcomes**

As noted above, previous research has shown that the probability of decisive victory by either the government or the rebels is greatest early in the war and that the longer the conflict lasts, the less likely either is to prevail militarily. Brandt *et al.* (2008) find that after about seven years, the most likely outcome is a negotiated settlement. When governments win, they usually win early, in part as a function of the military advantage they enjoy early in the conflict. Similarly, when rebels win, they too tend to win early, though more as a matter of a corrupt and weak government imploding than of the rebel's own battlefield prowess. We argue that (1) the ability of a regime to prevail early and, conversely, the likelihood of a regime suffering an early defeat should vary across regime type, and (2) in protracted civil wars, the willingness and ability of a regime to negotiate a peace agreement should also vary across regime type. We now turn to an analysis of

these variations.

### **Personalist Regimes**

What distinguishes personalist regimes from both one party regimes and military regimes is that once the leader is in power, s/he uses that power to marginalize all other rivals, actual or potential, through the use of coercion, purges, and brute force. As s/he succeeds in eliminating rivals – in the party and/or in the military leadership – s/he also purposely weakens the institutions of the state, populating their offices with personnel appointed not on the basis of merit, competence, or requisite skills and training but on the basis of their loyalty to the leader. That loyalty is based not on any ideological vision espoused by the leader but on a mixture of fear and greed, lubricated by a steady flow of patronage benefits and the sobering knowledge of the fate that befell those who questioned the leader's policies or the legitimacy of the leader's claims to the right to rule. Personalist dictators tend to rotate personnel in key offices in the government in order to prevent them from developing autonomous bases of support with which to challenge the incumbent's grip on state power (Geddes 1999, 133). As the autonomy of state institutions is compromised by these policies, the capacity of those institutions to deliver public services and public goods deteriorates as well.

This syndrome of regime characteristics suggests that personalist regimes should be less likely to negotiate a peace agreement to end a protracted civil war. The degenerative institutional capacity of the regime should make rebels less likely to believe that the dictator has the capacity (much less the willingness) to deliver on any commitments included in the terms of the peace agreement. To the extent that the peace agreement calls for the production and distribution of tangible policy

benefits, personalist regimes, among all regime types, have the least institutional capacity to deliver on such commitments.

Furthermore, peace agreements typically involve some sort of power-sharing arrangements in the post-war regime established by the peace agreement. In almost all cases, these power-sharing arrangements involve democratic elections that subject leaders in the post-war regime – both former rebels and the members of the personalist dictatorship – to the discipline of the ballot box. Among all regime types, personalist dictators are the leaders least likely to expect that they will do well at the ballot box. Their regime is based on a small winning coalition that sustains the dictator's hold on power through patronage and repression. The dictator's ability to sustain that patronage machine in the post-war regime will be severely constrained by power-sharing elements of that regime. Likewise, the dictator will no longer monopolize control over the coercive machinery of the state. Hence, her/his ability to repress challengers (and competitors) will also be constrained by power-sharing arrangements incorporated in a peace agreement. Moreover, the ability of the personalist dictator to expand her/his support base should be severely constrained by the poor economic performance, parasitic extractions, and repressive practices that sustained the regime in power before and during the civil war. Therefore, personalist dictators should be less likely to agree to a negotiated settlement because they have less reason to believe they can retain power in the post war regime.

*H<sub>1</sub>: Personalist regimes should be less likely than other regime types to negotiate a peace agreement to end a war.*

Since personalist dictators should be less likely to end a civil war through a peace agreement,

what do characteristics of such regimes suggest about their prospects for victory versus defeat? Personalist regimes are heavily embedded in the military as an institution since, first, many personalist dictators rose to power from positions in the military and, second, they depend on the military to keep them in power. Personalist dictators such as Muammar Gaddafi in Libya, Charles Taylor in Liberia, Saddam Hussein in Iraq, or Idi Amin in Uganda rose to power from the military ranks. While military regimes also share this attribute, political elites in personalist regime are fewer in number (a smaller winning coalition) and likely face much higher costs if defeated in conflict, compared to elites in military regimes. Elites in military regimes can “return to the barracks” to preserve the military as an institution while ceding political power to a new civilian government (Geddes 1999, 138). This difference should make personalist regimes more committed to fighting a rebellion in order to defeat it early before the regime’s own weaknesses are exposed by protracted conflict. Since studies show that government victories tend to happen earlier rather than later, we expect early government victory to be more likely in personalist regimes. Personalist dictators have the incentive to employ overwhelming military force early in order to preempt an armed challenge from growing.

*H<sub>2</sub>: Government victories are more likely to occur early in personalist regimes.*

However, the military in personalist regimes is built on the basis of personal loyalty, not professional competence. While soldiers have an incentive to defend the dictator from a rebel victory, their loyalty extends only to the extent that the dictator can sustain the flow of patronage benefits. As such, the military in a personalist dictatorship is less professionalized and less autonomous from the civilian leadership than is the case with other regime types. Officers are



chosen for the loyalty, not their competence in battle, and they are subject to arbitrary removal if the dictator suspects them of plotting against him or having ambitions of their own. Hence, the military in a personalist regime should be less able to sustain a protracted civil war than would be the case with its counterpart in other regime types. The collapse of the Mobutu regime in Zaire and the Qaddafi regime in Libya illustrate the risk of military defection in personalist regimes: when segments of the military come to doubt the willingness or ability of the dictator to sustain the patronage benefits that purchase the loyalty of troops, they are likely to defect, leaving the regime to collapse around the dictator.

*H<sub>3</sub>: Rebel victories are more likely to occur against personalist regimes later rather than early in the conflict.*

### **Military Regimes**

In regimes where the military has seized power, the military as an institution is usually more professionalized than its counterpart in a personalist regime. The officer corps is typically well-educated, and the command structure is characterized by formal bureaucratic procedures with regularized criteria for merit-based promotion. The military in O'Donnell's (1978) "bureaucratic authoritarian" regime is characterized by a strong nationalist ideology, whereby the military sees itself as the guardians of the national interest against both domestic and international threats. The military justifies its seizure of power on the grounds that they are the only institution capable of restoring order in the midst of a national crisis. Restoring order typically means a resort to the one policy response for which the military is well-quipped: repression of opposition movements that, in the eyes of the military, threaten the stability of the nation.

The military's one dimensional policy capacity should affect the duration and outcome of civil wars under military regimes. First, like most regimes, they enjoy a decided advantage over nascent rebel groups early in the conflict. Moreover, unlike the military in other regime types, their application of military force is not constrained by civilian political leaders or institutions. Therefore, we would expect military regimes to be more likely than one party or democratic regimes to achieve military victory early in civil wars.

*H4: Military regimes are more likely than other regime types to achieve government victory early in a civil war.*

Theory and evidence from the literature on transitions to democracy suggest that military regimes are more likely than some other types to make the transition to democracy because, in part, a professionalized, institutionalized military that seizes power often does so with the expressed desire to "return to the barracks" eventually, once they have resolved the crisis that motivated their coup in the first place. Moreover, as Geddes (1999, 126) argues, "[t]he worst possible outcome for the military as an institution is civil war in which one part of the armed forces fights another." Therefore, we might expect military regimes to be more likely than personalist regimes to seek a negotiated settlement to a civil war once they conclude that they are not likely to win it, especially if continuing to fight jeopardizes the military's own institutional interests.

*H5: Military regimes should be more likely than personalist regimes to negotiate a peace agreement to end a civil war.*

### **One-Party Regimes**

Single party regimes maintain control through a corporatist bargain between the state and

critical organized sectors of society, such as labor unions, peasants associations, industrial and commercial sector organizations. The party provides these sectors with a steady flow of benefits in return for their acquiescence to the party's control over the state and over leadership selection for both the state and those sectoral organizations. Maintaining this bargain requires an extensive and relatively effective set of state institutions to formulate and implement the policies required to sustain the support of key sectors. Thus, unlike personalist and military regimes, one-party regimes do have the institutional capacity to formulate and implement accommodative policies when challengers arise; they are not as exclusively reliant on coercive capacity as military and personalist regimes are. Geddes (1999, 129) notes that cooptation rather than coercion is the rule in one-party regimes: the party sustains its hegemony by coopting groups that are powerful enough to threaten the party's political hegemony and too strong to for the party to repress.

According to Geddes (1999, 132), one-party regimes tend to survive longer than either military or personalist regimes. Because of this superiority of institutional structure and the larger coalition of supporters, we expect one party regimes to be able to sustain fighting for a longer duration than military or personalist regimes. Given this, we would expect one-party regimes to be more capable than either military or personalist regimes of bringing an end to a civil war through either military victory or a negotiated settlement. They have the institutional means to incorporate rebel organizations into a power-sharing regime, and they have a record of accommodation that lends some credibility to power-sharing commitments they make in the terms of a peace agreement.

*H<sub>6</sub>: One-party regimes should be more likely than personalist regimes to achieve a military victory.*

*H7: One-party regimes should be more likely than other authoritarian regime types to negotiate a peace agreement to end a civil war.*

## **Democracies**

The “domestic democratic peace” proposition holds that democracies are less likely to experience civil war than other regime types (Hegre et al. 2001). However, when civil war does break out in a democratic regime, characteristics that are unique to democracy lead to different expectations concerning the likely duration and outcome of the conflict. Like one-party regimes, democracies have the institutional capacity to design and implement accommodative policies that would increase the payoffs to rebels from making a peace agreement as opposed to continuing to fight. Given the fact that incentive of voter support is greater for leaders in democratic countries, commitment they make during a peace agreement are more credible than similar commitments made by political figures in a personalist, military, or even one-party regime. Therefore, we expect the following:

*H8: Democracies should be more likely than other regime types to achieve a negotiated settlement to end a civil war.*

## **Research Design**

Our research question focuses on how civil war duration and outcomes vary across regime types, conceived of as representing clusters or syndromes of the discrete indicators of the state capacity indicators included in most studies of civil war duration and outcome. We use UCDP Conflict Termination Dataset, Version v.2010-1 (Kreutz 2010) for data on armed conflicts and their outcomes. A conflict is defined as “a contested incompatibility that concerns government

and/or territory where the use of armed force between two parties, of which at least one is the government of a state, results in at least 25 battle-related deaths” (UCDP/PRIO Armed Conflict Dataset Codebook: 1). Our estimation sample contains a total of 366 conflict episodes from years 1946 to 2009.<sup>2</sup> Out of these, 332 episodes terminate within the sample and 34 episodes are right censored.<sup>3</sup>

**Dependent Variables:** Our hypotheses seek to examine the effects of regime type on civil war outcomes. The Kreutz (2010) dataset lists six different outcomes for intra-state conflicts: peace agreements, ceasefire agreements with conflict regulations, ceasefire agreements, victory by either government or rebels, low activity, and a final “other” category for conflicts that do not fulfill the UCDP criteria with regards to organization or incompatibility. As shown in Table 1, 19 percent of the 366 episodes end in government victories, 9 percent in rebel victories, 22 percent in negotiated settlements, and 39 percent in low activity. Of the remaining episodes 10 percent are right censored, and 2 percent are coded as “other outcomes”.<sup>4</sup>

We use two approaches to examine the effect of regime type on armed conflict outcomes by coding the outcomes from the Kreutz dataset differently for each approach. First, we collapse the

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<sup>2</sup> Number of conflict episodes in Kreutz (2010) is 367. We drop a conflict episode from the dataset since conflict episode in Rwanda (1997 to 2009) is unclear. According to armed conflict dataset, this is a low intensity conflict on the border of the Democratic Republic of Congo and Rwanda. Including this episode, however, does not affect the main result.

<sup>3</sup> There are 15 episodes (865 country-month observations) that are categorized as “other” regimes. In Geddes dataset they are either warlord regimes like Somalia since 1992 or Afghanistan from 1993-1996; democratic but foreign-occupied like Iraq since 2004 (till 2009) or Afghanistan since 2003; non-independent like Zimbabwe from 1967-1979; or provisional like South Sudan in the year 1967 or Niger in 1992.

<sup>4</sup> The “Other” outcome category, which includes the following 8 conflict episodes Yugoslavia (1991), Russia (1990-1991), Russia (1999-2007), Somalia (2001-2002), China (1946-1949), India (1947-1948), Myanmar (1948-1988) and South Vietnam (1955-1964), is included in this study. Excluding this category does not impact the final outcome.

six outcomes from the dataset into the three common categories of civil wars: government victory, rebel victory and negotiated settlement. While the government and rebel victories are coded directly from the Kreutz dataset, the “negotiated settlement” category includes outcomes coded as either peace agreements, ceasefire agreements with conflict regulations, or ceasefire agreements.

[Table 1 Here]

Second, we estimate models with the outcomes categorized into two broad categories: “government favorable” and “rebel favorable” outcomes, following Fortna (2015, 523-24), Gurses (2015), and Greig, Mason, and Hamner (2016). “Government favorable” outcomes combine UCDP’s “government victory” and “low activity” outcomes on the grounds that both outcomes are marked by the end of armed conflict without a peace agreement and with the original regime still in place. As Wallensteen (2015, 4) notes, many victories do not come to a formal ending. Instead, the “opponent just disappears.” Similarly, “rebel favorable” outcomes are a combination of “rebel victory” and the “negotiated settlement” outcomes described above. For rebels, both rebel victory and negotiated settlements leave them better off than government victory or the *status quo ante*. Combining outcomes into government and rebel favorable outcomes allows us to examine whether regime type has any effect on which side ends up with a more favorable outcome. There are 213 episodes that end in government favorable outcome, and 111 episodes that end in rebel favorable outcome for the period of 1946-2009.

**Explanatory Variables:** The primary explanatory variable is *regime type* as defined by Geddes, Wright, and Frantz (2012, GWF henceforth). The GWF dataset covers country-years for the 1946-2010 period for all independent countries with more than one million inhabitants in 2009.

According to the authors, an authoritarian regime starts when (1) an executive achieves power through undemocratic means, or (2) an executive comes to power through democratic means but then makes rules to limit competition in subsequent elections, or (3) the military intervenes to prevent a popular party from winning an election. The four main subcategories of authoritarian regimes are explained below.

First, *military regime* is coded “1” for those regimes “governed by an officer or retired officer, with the support of the military establishment and some routine mechanism for high level officers to influence policy choice and appointments”. Geddes classifies *personalist regimes* as those in which “the leader, who usually came to power as an officer in a military coup or as the leader of a single-party government, had consolidated control over policy and recruitment in his own hands, in the process marginalizing other officers’ influence and/or reducing the influence and functions of the party.” *Single-party regimes* are defined as those “regimes in which the party has some influence over policy, controls most access to political power and government jobs, and has functioning local-level organizations”. Those “regimes that had important characteristics of more than one pure regime type” are defined as *hybrid regimes*. These are *single party military*, *single party personalist*, *military personalist*, and *military/personalist/single-party* amalgam regimes. The final category is *monarchies*, which differ from personalist regimes largely on the basis of their being an institutionalized (hereditary) mechanism for leadership succession. The GWF data collapses these autocratic regimes into four categories: military regimes (includes indirect military, military, military/personal); monarchial regimes; party-based regimes (includes party, party/military, party/personal, party/personal/military, and oligarchy); and personalist regimes. In

the GWF dataset regime type for a given country-year is coded “democracy” if it is not coded as one of the autocratic regimes described above.<sup>5</sup>

We control for a number of confounding factors that may influence conflict outcomes. First, we include the annual number of battle deaths in thousands.<sup>6</sup> Data for this variable come primarily from Lacina and Gleditsch (2005) for data on battle related deaths for episodes between 1946 and 2008 and Gleditsch et al. (2002) for battle related deaths for the year 2009 and for some episodes where the information is missing in the previous dataset. Second, we include the nation’s number of military personnel as a proxy for state military capacity. The data for military personnel are extracted from the National Military Capability (NMC) version 3.0 from the Correlates of War dataset (Singer 1987).<sup>7</sup> Third, we include from the NMC dataset total population (logged) for each country. Finally, we control for the GDP per capita in current USD. This variable comes from the updated version of the Gleditsch and Ward (1999) which includes country-cases from 1950-2010. For the few country-cases that saw conflict episodes in years between 1946 and 1950, we use data from the following years.

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<sup>5</sup> For countries that are not included in the GWF dataset due mainly to their small population we primarily relied on Polity IV Project to code democratic regimes. Country-years with a score of 6 or higher on the Polity’s composite index, which ranges from -10 to +10 with higher numbers indicating higher levels of democracy, were coded democratic. The Polity data were retrieved at <http://www.systemicpeace.org/inscr/inscr.htm> on August 7, 2012.

The GWF data set excludes country-years if a country has a provisional government. If the provisional government instead of holding elections converts itself into ‘permanent’ government, it is coded autocratic and included in the data set. For such cases, we code these excluded-years the same as the subsequent years unless it resulted in democracy. For instance, the GWF data set does not code regime type for the year 1991 for Georgia and Azerbaijan. This variable, however, is coded “personal” for the following year for both cases. Thus, we coded the year 1991 “personal” for these countries as well. Likewise, the regime type variable is not coded for Greece for the year 1947 yet this variable is coded “democracy” in 1948. Hence we coded 1947 “democracy” as well. We exclude country-years that are coded “foreign-occupied” (e.g., Afghanistan 2001-2009) and “warlord” (e.g., Somalia since 1991).

<sup>6</sup> Logged form of this variable slightly improves the skewness. However, using logged form does not improve the model.

<sup>7</sup> Military Personnel is used as the number of military personnel in 100 thousands.



**Method:** The three possible outcomes of an armed conflict, government victory, rebel victory or negotiated settlement are mutually exclusive and exhaustive: a civil war can end in one and only one of these outcomes. Since our dependent variable is civil war outcomes, we use competing risk duration model following Brandt et al. (2008) and Balch-Lindsay, Enterline, and Joyce (2008). The model allows us to analyze the odds of a civil war ending in each of the three possible outcomes, relative to the odds of that war continuing for another year.

A cursory look at the descriptive statistics shows that civil war duration varies as a function of the outcome. For instance, we find that wars won by the government (average duration: 16.03 months) and wars that end in rebel victory (average duration: 34.29 months) are both shorter than wars that end in a negotiated settlement (average duration: 67.05 months). An analysis of variance (ANOVA) of war duration suggests that civil war duration is statistically different across the three outcomes [ $F=8.45$ ,  $p\text{-value} < 0.0003$ ]. Previous studies too have found similar results (Brandt et al. 2008; Balch-Lindsey, Enterline, and Joyce 2008; Mason et al. 1999). We further explore this using a more comprehensive approach described below.

Among possible estimators for a competing risk specification, we use Fine and Gray's (1999) semi-parametric model. Compared to the cause-specific hazard in the Cox model, Fine and Gray's model focuses on sub-hazards because of cause  $i$ , assuming independence from sub-hazard from any other cause, until time duration  $t$  (Cleves et al. 2010, 382). Therefore, estimating the cumulative incidence hazard of an outcome, say government victory, using Fine and Gray's competing risk model is a function of both cause specific hazard from the covariates and hazards from all other competing outcomes such as rebel victory and negotiated settlement. However, to

estimate competing risks in an event history dataset that includes both cause specific hazards and subhazards attributable to other outcomes, Fine and Gray's semi-parametric approach requires that the proportional hazard assumption is not violated. We checked for violations of this assumption by examining whether any covariate is significantly different from 0 when interacted with time. For the main explanatory variables that violate the proportional hazard assumption, we include in the model their interaction with time in order to control for the time-dependency component of that variable (Box-Steffensmeier and Jones 2004, 136). The coefficient of the constitutive term or the variable that remains separate from the time interaction is the mean time-invariant effect of the variable on the outcome. With this approach, time varying covariates can be included in the model if they are in discrete form (Beyersmann and Schumacher 2008; Cortese and Andersen 2010, 144).<sup>8</sup> For clarity and robustness, we first present Cox model results that show the influence of regime type on a particular outcome. We then estimate Fine and Gray's competing risk models by adding sub-hazards of different outcomes to the cause-specific hazards.

## **Findings**

Results in Table 2 are from cox and competing risk models. They show the effects of regime type on the three outcomes. The competing risk models (Models 4-6) are the main models of interest. But as stated above, we also present results from cox models (Models 1-3) mainly for comparison.

[Table 2 Here]

The outcome variable for Models 1 and 4 is government victory, and the baseline regime type

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<sup>8</sup> Biostatistics research has made significant progress in using competing risk models (see, for instance, Andreasson et al. 2011, 2869).

in both models is democracy. While none of the regime type coefficients in Model 1 are statistically significant, results from Model 4 indicate that personalist regimes are significantly more likely than democracies to achieve a government victory. The coefficient 0.652 for personalist regime in Model 4 equals to a sub-hazard ratio of  $\exp(0.652)=1.92$ . This suggests that a personalist regime is nearly twice as likely as a democracy to achieve a government victory. This effect is depicted graphically in the left panel of Figure 2. As shown in the figure, cumulative hazard for government victory in a personalist regime is the highest among all regime types and increases steadily for up to 24 months. A personalist regime has a significantly higher risk of government victory compared to both democracies and one party regimes, but not significantly greater risk of achieving victory than military regimes.<sup>9</sup> In sum, the findings suggest that personalist regimes are more likely to achieve government victory during earlier phase of an armed conflict when compared against other regime types.

[Figure 2 Here]

Models 2 and 5 estimate the risk of rebel victory, but in both models none of the regime type variables are significant. This is likely the case because of the small number of rebel victories in each regime type category, as shown in Table 1. We therefore move to models 3 and 6 that analyze the outcome of negotiated settlement. The baseline regime category in these models is military regime. Results obtained from Cox model (Model 3) differ slightly from those of the competing risk model (Model 6). In Model 3, both democratic regimes and personalist regimes have positive

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<sup>9</sup> See figure 2, and also model 4 in Table 2a, 3a and 4a, where democracy, personalist regime and military regime are baseline, respectively.

and statistically significant coefficients, suggesting that democratic and personalist regimes are 3.07 times and 2.88 times more likely, respectively, than military regimes to end a civil war in a negotiated settlement.<sup>10</sup>

We should note that in Model 6 the regime type variables violate the proportionality assumption, and therefore the time interaction terms are included in that model. Interpreting the coefficients, democratic regimes are 7 times more at risk of ending a conflict with negotiated settlement compared to the baseline category of military regime [ $\exp(1.957)=7.08$ ]. But the negative time interaction coefficient for personalist regimes suggests that the risk of those regimes ending a conflict with a negotiated settlement declines over time. Similarly, personalist regimes are 5 times more likely to end a war in a negotiated settlement compared to military regimes [ $\exp(1.643)=5.17$ ]. When examining Figure 2, we find that the risk of negotiated settlement is higher for democratic regimes towards the beginning of the conflict. However, after about 24 months the hazard for personalist regimes achieving a negotiated settlement exceeds that of a democratic regime. This suggests that personalist regimes are quicker to negotiate for peace, if they fail to achieve early victory.

**Government Favorable and Rebel Favorable Outcomes:** Like several previous works (e.g., Brandt et al. 2008; Mason, Weingarten, and Fett 1999), Models 1-6 do a better job of predicting government victories and negotiated settlements than rebel victories. This is likely the result of the small number of rebel victories and, hence, the possibility that general trends are overwhelmed by idiosyncratic features of a relatively small number of conflicts. In the second stage of the analysis,

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<sup>10</sup>  $\exp(1.123)=3.07$  and  $\exp(1.064)=2.88$

we attempt to compensate for this distribution problem by re-categorizing outcomes into “rebel favorable” versus “government favorable” outcomes. The “government favorable” is coded “1” if UCDP codes it as “government victory” or “low activity”: the war has ended without a peace agreement, and the incumbent regime is still in power. The “rebel favorable” outcome subsumes the UCDP outcome codes of “rebel victory”, “negotiated settlement”, and both “cease fire” categories. Individual cause-specific hazards are estimated using Cox models, and sub-hazard ratios are estimated using Fine and Gray’s competing risk approach. These results are shown in Table 3.

[Table 3 Here]

We found evidence of a violation of proportional hazard assumption among the main variables of interest in Model 4. Therefore, we control for the time varying variables by interacting them with time. The resulting coefficients indicate that the time invariant variables cause changes in the hazard of the rebel favorable outcome.

In Models 1 and 3 (Table 3), democratic regime is the reference category. For the competing risk model (Model 3) we find that all of the other three regime types have higher hazards than democracies for ending a civil war in a government favorable outcome compared to ending rebel favorable outcome.<sup>11</sup> The cumulative incidence function in Figure 3 is generated from Model 3 of Table 3. It shows that democratic regimes have a significantly lower probably of achieving a

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<sup>11</sup> For the Cox model (Model 1) the same is true with the one exception of military regimes, which are no more or less likely to achieve government favorable outcome than are democracies. But rather than comparison against rebel favorable outcome, cox model only shows the hazard of government favorable outcome compared to any other outcomes (that is, baseline is unspecified).

government favorable outcome compared to all other regimes, and this incidence is a function of both the cause specific hazard due to regime type and as well as the competition with the other outcome category, namely rebel favorable outcomes.

[Figure 3 Here]

In the case of rebel favorable outcomes, personalist regimes and democratic regimes are significantly more likely than military regimes to experience this outcome (Models 2 and 4). We focus on Model 4, which includes time interaction with regime type variables to account for the violation of the proportional hazard assumption. Here, we see that the hazard of a rebel favorable outcome for a democratic regime is nearly three times higher than that for the baseline category of military regime.<sup>12</sup> The risk of a rebel favorable outcome is 147 percent greater for a personalist regime than for a military regime. However, due to the time varying aspect of the two variables, the effect of regime type on this outcome varies over time, which we will identify using a different approach described below.

The violation of proportionality assumption in Fine and Gray's specification is considered problematic. In order to provide a robustness test for the findings, we use a flexible parametric model that uses cubic splines that can more robustly predict cumulative hazards without the constraints of the proportional hazard assumption. We use the `stpm2` command in Stata (Lambert and Royston 2009). The results obtained from the flexible parametric model (not reported here) confirm the results from the Fine and Gray models with the time interaction with time-varying

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<sup>12</sup> Coefficient 1.345 equals to sub-hazard ratio of 3.84. For personalist regime, coefficient 0.906 equals to sub-hazard ratio of 2.47.

variables in Model 4 of Table 2. The coefficients for democratic and personalist regimes are statistically significant and positive, suggesting a greater risk of rebel favorable outcome for these regime types compared to military regimes. However, the negative coefficient for the time-interaction variable shows that this effect decreases with respect to time. Finally, the findings, as depicted in Figure 2, do not indicate a significant relationship between one-party regimes and civil war outcomes.

With regard to the control variables, it is worth mentioning that GDP/pc --- a variable that has been used as a proxy for state capacity -- fails to achieve significance in any of the models in Table 2 and is significant only in the model for government favorable outcome in Table 3. This suggests that the effect for this variable found in previous studies may be a function of the cluster of state attributes captured by the regime type variable rather than it being an independent measure of state capacity. Furthermore, military strength, i.e., the number of military personnel, increases the likelihood the war ending in a government victory, confirming DeRouen and Sobek (2004). This effect, however, declines over time as demonstrated by the negative coefficient on the *military pers\*\_t* variable. Similarly, the negatively significant coefficient for population (log) in models 4, 5 and 6 suggests that a large population makes a conflict less likely to end, but the positive time interaction suggests that its effect turns positive over time.<sup>13</sup> Overall, regime type and population

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<sup>13</sup> Tables in the appendix show models that include four additional variables: post-cold war, rebel strength (Cunningham, Gleditsch and Salehyan 2009), conflict incompatibility (whether it is fought over a territory or government) and count of conflict repeated episodes. While the main result does not change after including these variables, results for these variables are in expected direction. For instance, government victories appear to be more likely before post-cold war, whereas negotiated settlements are more likely outcome after the end of cold war. Similarly, conflicts with stronger rebel groups and those that are territorial conflicts are more likely to end in rebel victory. We also considered the effect of the biological age of dictators on the war outcome. We believe that leaders' biological age is closely related to regime type. Monarchs, for instance, tend to be older due mainly to the

appear to be better predictors of civil war outcome.

## **Discussion and Conclusion**

We began with the question of whether civil war outcomes vary across regime types. Building on earlier state-centric theories of civil wars, we argue that state characteristics that put a nation at greater risk of civil war should also serve as good predictors of how civil wars terminate. Results from a series of competing risk models show that civil war outcomes do vary across regime type. The pattern of state-society relations that characterize democracies seems to motivate leaders to seek a political solution rather than fight on in search of decisive victory. Compared to democracies, all three types of authoritarian regimes - personalist, military, and one-party regimes – are more likely to win against the rebels.

The findings on personalist regimes run contrary to our expectations: personalist regimes are more likely to win than democracies and more likely to negotiate a peace agreement than military regimes. However, these findings also demonstrate that the relationship between personalist regimes and civil war outcome is not clear cut. The risk of outcome type tends to vary over time for personalist regimes. For instance, although both democracies and personalist regimes increase the chance of the peace agreement outcome, the interaction with time reveals a more nuanced pattern. Democracies tend to start negotiating during the early phases of conflict,<sup>14</sup> around the time when the cumulative hazard of government victory stops increasing (Figure 2). Personalist regimes, however, avoid negotiations in the first few months and instead seek to crush the rebellion

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characteristics of the regime. For a detailed analysis of the effect of dictators' age and armed conflict see Berton and Panel (2018).

<sup>14</sup> From around month 8 since the start of conflict



(higher cumulative hazard for government victory in Figure 2), in part because of doubts about how the personalist leader and his inner circle would fare in any new regime established by a peace agreement. Nevertheless, personalist leaders become more willing to negotiate around month 30. These findings are in line with what we know about these two regime types. Democracies' willingness to negotiate, and to do so early on, and personalist regimes' first response to an armed challenge, suppress it if possible, are reflective of their nature. Once personalist regimes fail to achieve a decisive military outcome, they become ripe for a settlement to avoid a defeat.

Another important finding is that civil wars are dynamic phenomena. As the conflict evolves, so do the chances of whether it will end in a military victory or negotiated settlement. As shown in Model 6 of Table 2 and illustrated in Figure 3, the best chance to bring about a negotiated peace agreement is the first 3 to 5 years. After that the dynamics of the conflict change to a degree that could engender an environment characterized by recurrent conflict as actors adjust to this new reality of conflict. The window for a negotiated peace agreement is not open forever. The findings point to the "best time" to bring warring parties to the table to negotiate a peace agreement. For democracies, negotiated settlement seems very likely from the very early stages of the conflict until about four years later. For one-party regimes, the chances of negotiated settlement are highest between 12 to 20 months into the conflict episode. After that, the hazard rate for negotiated settlement ceases to increase, and government favorable outcome becomes more likely, as the left panel in Figure 2 suggests.

This study contributes to the literature on state-capacity and civil war by using regime type as a measure of distinct syndromes of state capacity that account for variation in the competing risk

of different conflict outcomes across these regime types, all else being equal. Our analysis also highlights the dynamic nature of civil war episodes: the risks of each outcome not only vary across regime types but vary across time for each regime type. We have demonstrated that our measure of state capacity, regime type, has an independent and significant influence on civil war outcomes, just as previous studies have demonstrated that the risk of civil war onset varies across regime type (Fjelde 2010; Gurses and Mason 2010) and that the risk of peace failure in the aftermath of civil war also varies across regime type (Mason and Greig 2017).

A number of caveats are in order. First, our models do not do a good job predicting rebel victories. While this might be due to the small number of rebel victories, it also points to fundamentally different nature of civil wars that come to an end in a rebel victory. Specifically, the best (and only) predictors of rebel victories seem to be those factors that do not have much to do with the level of economic development or state capacity. Instead, deadly civil wars that were fought over territory are more likely to end in a rebel victory. Moreover, our model does not control for the possibility of endogeneity issues. Regime type can be shaped by war dynamics. This is particularly the case for long and costly wars from which regime changes arise. More research is needed to examine how war dynamics impact regime type and whether regime characteristics help explain post-war peace duration.

Table 1: Distribution of Conflict Outcomes by Regime Types, 1945-2009

|                         | Single-party regime | Military regime | Monarchy | Personalist regime | Democracy | Other regime | Total |
|-------------------------|---------------------|-----------------|----------|--------------------|-----------|--------------|-------|
| Government victory      | 15                  | 7               | 9        | 22                 | 15        | 3            | 71    |
| Rebel victory           | 10                  | 5               | 1        | 7                  | 8         | 0            | 31    |
| Negotiated settlement   | 15                  | 6               | 2        | 21                 | 29        | 7            | 80    |
| Low activity            | 53                  | 28              | 2        | 22                 | 35        | 2            | 142   |
| Other outcomes          |                     |                 |          |                    |           |              | 8     |
| Ongoing in 2009         |                     |                 |          |                    |           |              | 34    |
| Total conflict episodes |                     |                 |          |                    |           |              | 366   |

Table 2: Regime Type and Civil War Outcomes

| VARIABLES           | Cox Model            |                      |                     | Competing Risk       |                       |                      |
|---------------------|----------------------|----------------------|---------------------|----------------------|-----------------------|----------------------|
|                     | (1)<br>Gov vic       | (2)<br>Reb vic       | (3)<br>Neg set      | (4)<br>Gov vic       | (5)<br>Reb vic        | (6)<br>Neg set       |
| Democracy           |                      | -0.117<br>(0.612)    | 1.123**<br>(0.481)  |                      | -0.453<br>(0.613)     | 1.957***<br>(0.636)  |
| Personalist regimes | 0.563<br>(0.357)     | -0.350<br>(0.580)    | 1.067***<br>(0.383) | 0.652*<br>(0.333)    | -0.716<br>(0.592)     | 1.643**<br>(0.639)   |
| Military regimes    | -0.198<br>(0.582)    |                      |                     | 0.002<br>(0.581)     |                       |                      |
| Party regimes       | -0.312<br>(0.439)    | -0.081<br>(0.575)    | 0.649*<br>(0.378)   | -0.301<br>(0.427)    | -0.290<br>(0.559)     | 0.867<br>(0.670)     |
| Other regimes       | -0.542<br>(0.491)    | -45.475<br>(0.000)   | 1.172**<br>(0.462)  | -0.621<br>(0.425)    | -15.846***<br>(1.857) | 1.835***<br>(0.627)  |
| Military personnel  | 0.124***<br>(0.018)  | -0.370<br>(0.292)    | -0.015<br>(0.055)   | 0.138***<br>(0.018)  | -0.325<br>(0.219)     | 0.026<br>(0.045)     |
| GDP per capita      | -0.107<br>(0.103)    | -0.153<br>(0.160)    | 0.122<br>(0.123)    | -0.101<br>(0.104)    | -0.141<br>(0.145)     | 0.164<br>(0.134)     |
| Battle deaths       | -0.036<br>(0.045)    | 0.043***<br>(0.015)  | -0.008<br>(0.022)   | -0.032<br>(0.043)    | 0.041***<br>(0.015)   | -0.005<br>(0.018)    |
| Population(log)     | -0.425***<br>(0.111) | -0.510***<br>(0.170) | -0.284**<br>(0.145) | -0.476***<br>(0.109) | -0.384**<br>(0.162)   | -0.532***<br>(0.143) |
| Democracy*_t        |                      |                      |                     |                      |                       | -0.008***<br>(0.003) |
| Party*_t            |                      |                      |                     |                      |                       | 0.003<br>(0.005)     |
| Personalist*_t      |                      |                      |                     |                      |                       | -0.004<br>(0.004)    |
| Military pers*_t    | -0.012**<br>(0.005)  |                      |                     | -0.016**<br>(0.006)  |                       | -0.001***<br>(0.000) |
| Population*_t       |                      |                      |                     | 0.010***<br>(0.003)  |                       | 0.008***<br>(0.001)  |
| Other reg*_t        |                      |                      |                     | 0.015<br>(0.014)     |                       |                      |
| Number of subjects  | 366                  | 366                  | 366                 | 366                  | 366                   | 366                  |
| Failed              | 71                   | 31                   | 80                  | 71                   | 31                    | 80                   |
| Competing           |                      |                      |                     | 252                  | 292                   | 243                  |
| N                   | 18,734               | 18,734               | 18,734              | 18,734               | 18,734                | 18,734               |

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

Note: Unlike Cox models that provide hazards of ending in an outcome or not, competing risk models take into account the mutually exclusive sub-hazards for an outcome. In model 2, both military regimes and other regimes are the baseline category since there is no observation in other regime category that ended in rebel victory. Adding “Other regimes” to the model produces very large coefficient but does not change the substantive result. Coefficients reported in the table.

Table 3: Government and Rebel Favorable Outcomes

| VARIABLES           | Cox models                     |                           | Competing risk models          |                           |
|---------------------|--------------------------------|---------------------------|--------------------------------|---------------------------|
|                     | (1)<br>Government<br>favorable | (2)<br>Rebel<br>favorable | (3)<br>Government<br>favorable | (4)<br>Rebel<br>favorable |
| Democracy           |                                | 0.861**<br>(0.351)        |                                | 1.345***<br>(0.492)       |
| Personalist regimes | 0.570**<br>(0.236)             | 0.666*<br>(0.342)         | 0.722***<br>(0.237)            | 0.906*<br>(0.503)         |
| Military regimes    | 0.387<br>(0.240)               |                           | 0.675***<br>(0.249)            |                           |
| Party regimes       | 0.474**<br>(0.221)             | 0.504<br>(0.337)          | 0.776***<br>(0.225)            | 0.539<br>(0.517)          |
| Other Regimes       | -0.195<br>(0.459)              | 0.431<br>(0.427)          | 0.010<br>(0.439)               | 0.791<br>(0.548)          |
| Military personnel  | 0.047***<br>(0.017)            | -0.021<br>(0.055)         | 0.044***<br>(0.014)            | 0.006<br>(0.046)          |
| GDP per capita      | 0.001<br>(0.062)               | 0.041<br>(0.117)          | -0.159**<br>(0.065)            | 0.071<br>(0.115)          |
| Battle deaths       | -0.076<br>(0.051)              | 0.006<br>(0.007)          | -0.114<br>(0.078)              | 0.007<br>(0.007)          |
| Population(log)     | -0.098<br>(0.062)              | -0.510***<br>(0.109)      | -0.015<br>(0.057)              | -0.600***<br>(0.116)      |
| Democracy*_t        |                                |                           |                                | -0.007**<br>(0.003)       |
| Personalist*_t      |                                |                           |                                | -0.002<br>(0.004)         |
| Party*_t            | 0.005*<br>(0.003)              |                           |                                | 0.004<br>(0.004)          |
| Military pers*_t    |                                |                           |                                | -0.001***<br>(0.000)      |
| GDP*_t              |                                |                           | 0.005***<br>(0.001)            |                           |
| Battle deaths*_t    | -0.002<br>(0.002)              |                           |                                |                           |
| Population*_t       |                                | 0.003***<br>(0.001)       |                                | 0.008***<br>(0.001)       |
| Number of subjects  | 366                            | 366                       | 366                            | 366                       |
| Failed              | 212                            | 111                       | 212                            | 111                       |
| Competing           |                                |                           | 111                            | 212                       |
| Observations        | 18,734                         | 18,734                    | 18,734                         | 18,734                    |

\*\*\* p<0.01; \*\* p<0.05; \* p<0.1

Robust standard errors in parentheses (Clustered by countries) and coefficients reported in the table.

Figure 1 State decisions in civil wars and regime type

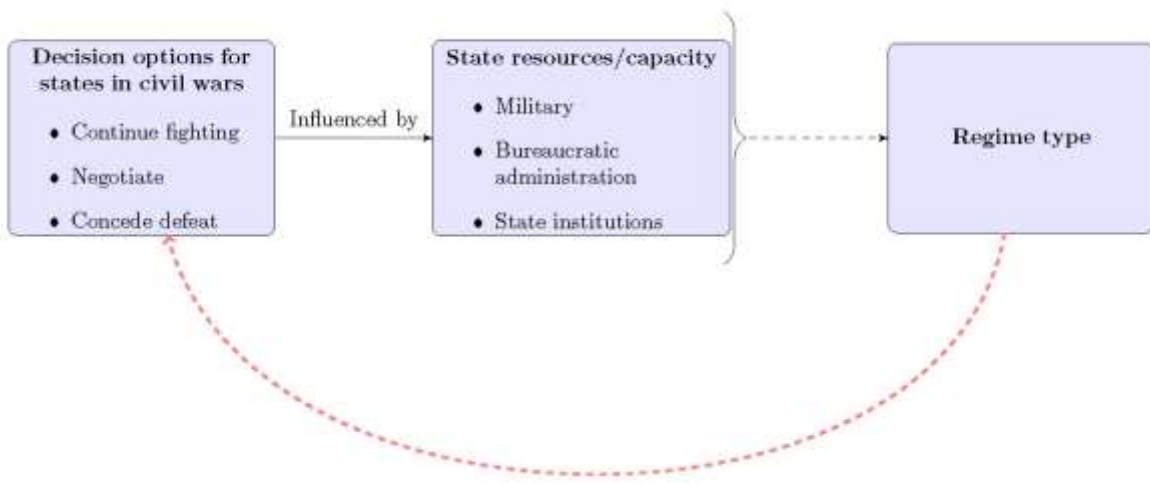
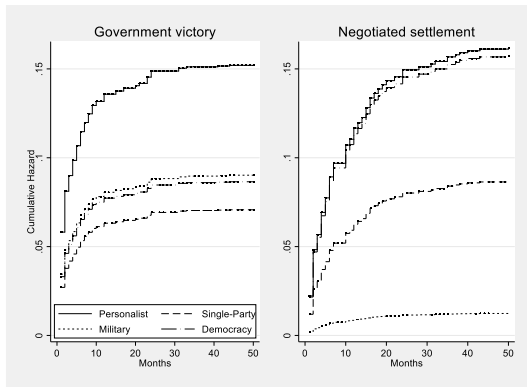
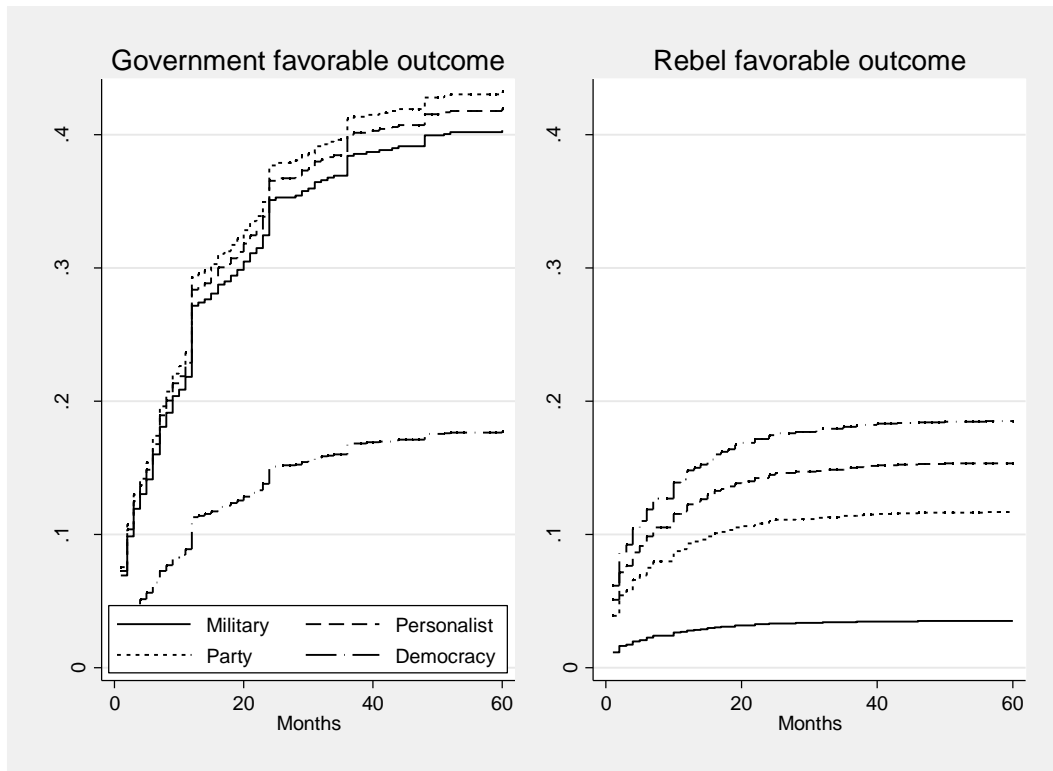


Figure 2: Competing Risks For Outcomes Government Victory And Negotiated Settlement



Note: Figure above is the result of competing risk models 4 and 6 in Table 2. The left panel shows that personalist regimes have higher likelihood of ending in military victory. The cumulative hazard for personalist regime increases steadily until around 24 months. The right panel shows that both democracies and personalist regimes have higher probabilities for negotiated settlements than other regimes. Looking at the figure closely, democracies are found to have slightly higher hazards towards the beginning, but then hazards for personalist regimes tops at around 2 years or after. This suggests that if personalist regimes cannot achieve initial victory, they are more likely to negotiate with the rebels in the latter years.

Figure 3: Competing Risks for Government and Rebel Favorable Outcome



Note: Figure above is the result of competing risk models 3 and 4 in Table 3. The left panel shows that other regime types have higher likelihood of ending in government favorable outcome (government victory or low activity). The right panel shows that likelihood of rebel favorable outcome increases with time and it is the highest in democracies, followed by personalist, party and military regimes.



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