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Explaining the Dynamics of Civil War: Exposure, Violence, and Consolidation against Civil War

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EXPLAINING THE DYNAMICS OF CIVIL WAR: EXPOSURE, VIOLENCE, AND CONSOLIDATION AGAINST CIVIL WAR

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Abstract

This study disaggregates civil wars into three types: conventional, irregular, and symmetrical nonconventional. Conventional and symmetrical nonconventional warfare are instances of conflict whereby the incumbent state and the insurgent enjoy equally heavy and sophisticated artillery (conventional) or equally light and rudimentary weaponry (symmetrical nonconventional). Irregular civil wars are fought when the incumbent enjoys clear militaristic superiority relative to the insurgent. This study suggests that economic grievances can expose states to irregular civil wars, while high religious fractionalization and high ethnic fractionalization in autocratic states can make them vulnerable to conventional and symmetrical nonconventional civil wars, respectively. Further, across the three types of civil wars, irregular civil wars are the deadliest for civilians. Conventional civil wars are the deadliest when it comes to estimating the number of battle-related casualties. Finally, and regardless of the type of civil war, a sustained increase in the wealth of nations has decisively helped states move toward consolidation against civil war, especially since the late 1920s.

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Chapter 1
Introduction

The study of civil wars possibly enjoys the longest historical legacy among studies on instances of political violence in the field of Political Science. In fact, since the period of classical Greece, Thucydides documented instances of what nowadays would arguably be considered episodes of civil war. Further, it was the antagonism between the defenders of democracy and those of oligarchy that triggered the internal war of Corcyra, which brought about the Peloponnesian War that opposed Athens to Sparta (Thucydides 2013). That is to say that not only have civil wars been ubiquitous in human history, but that they also have appeared to play a major role in changing political and war dynamics throughout history.

Thus, it becomes important to explain what makes states vulnerable to civil war. The literature on the vulnerability or exposure to civil war onset has typically taken three main trajectories. One vein of the literature correlates civil war onset with ethnic conflict (Montalvo *et al*. 2005; Cederman *et. al* 2009; Cederman *et al.* 2013; Miodownik *et al.* 2011; Gurses 2015). Some have developed rational choice models to assess rebel tactics of mobilization as a function of cost and benefit calculus (Bueno de Mesquita 2013). Others have attributed economic opportunism to civil war onset (Collier *et al.* 2004). While, others have argued that the civil wars, which erupted in the 1990's are merely the result of protracted conflicts of the 1950's (Fearon *et al.* 2003). A relatively new vein within the literature has elaborated on the type of violence (direct or indirect) and the form of warfare (irregular, conventional, or symmetrical nonconventional civil wars[1]) when discussing civil war severity as a function of civilian and battle-related deaths (Kalyvas 2001, 2006; Balcells 2010; Balcells *et al.* 2014). Thus, instead of opting for over-

[1] The three categories of civil wars are defined in Section 3.1.

aggregation of all civil wars into one measure, those works have categorically differentiated between the weaponry used by the warring actors[2] (Balcells *et al.* 2014) along with the level of control over resources (i.e. territory and citizenry) each warring actor claims to have (Kalyvas 2001, 2006) (Kalyvas *et al.* 2009) on a subnational level. Since several of the aforementioned works focus exclusively on the variation in the level of violence (the casualties sustained by of both civilians and non-civilians, or combatants), the first part of this study attempts to fill the gap in the research by assessing the exposure (i.e. the vulnerability of a state) to civil war, while adhering to the conceptual and empirical distinction between conventional, irregular, and symmetrical nonconventional civil wars. To the best of my knowledge, neither the aforementioned disaggregation nor the type of models used in systematically assessing the risk of civil war onset have yet served to explain the risk exposure to civil war onset in the broader literature.

The second part of this study assesses the level of violence unique to civil wars. There are no civil wars without civilian casualties. While seemingly trivial at face value, this statement helps to legitimately put into perspective the violence perpetrated against civilians over the course of a civil war. In the words of Hannah Arendt, "it [violence] is a phenomenon in its own right" (as cited in Kalyvas 2006: 20). The level of violence is disaggregated into two scopes of analysis: first is a macro-level analysis before assessing the variation in the level of violence on the micro-level in order to identify a fundamental difference (if any) in the patterns of violence when considering both levels, separately. Moreover, another distinction is made between the victims who succumb during civil wars. The level of violence first conflates civilian and combatant casualties (i.e. battle-related deaths), before isolating combatants in order to exclusively focus on civilian deaths (deaths occurring outside the battlefield). This disaggregation will help distinguish a pattern of violence

[2] Throughout this paper, the phrase 'warring actors' will always refer to both the incumbent state and the insurgent, in a context of civil war.

unique to a type of civil war while also assessing which type of civil war is more lethal. Thus, the differential in the level of violence becomes a function of the type of civil war being fought.

The disaggregation into the dyads macro/micro-level, civilian/combatant casualties, and the triad conventional/irregular/symmetrical nonconventional civil wars should improve the visibility of the dynamics of civil war. In turn, this improved visibility should be amenable to identifying the level of violence, its scope, and the perpetrator(s) of that violence. Consequently, these newfound insights should help the academic community gain an analytical leverage over the ubiquitous phenomenon that is civil war, while allowing the policy community to develop measures in the hopes of encouraging compromise between the two warring actors, in order to put an end to a given civil war of which civilians typically pay the price. This study, given its focus (albeit not exclusive) on micro-level variation in the level of violence perpetrated against civilians, should also be amenable to policy formation when implementing and developing sustainable, credible, and fair trials of accountability for war-crimes once a civil war comes to an end.

Finally, the third section assesses the extent to which states consolidate against the risk exposure to civil war. Here civil war types are all conflated together as the variation between consolidating and failing to consolidate against all types of civil war is deemed more valuable than that between consolidating and failing to consolidate against a specific type of civil war. The results of this section are based on a unique statistical model, which, unlike the models presented in the existing literature, is centered on a change-point model analysis derived from Bayesian computation. The results suggest that wealthy states decisively began moving toward consolidation against civil war in the early 1930s. Also, while non-democratic states fail to consolidate against civil wars, especially since the 1960s, states with a higher democratic propensity are still far from being immune to civil wars, especially since the early 1940s. These

findings indicate that the difference between civil war onset and not experiencing civil war is one of wealth and state maturity, and not one of democratic quality. The wider implication puts into perspective the notion (albeit essentialist in a sense) that some states may not be ripe to consolidate decisively against the risk exposure to civil war, and that time, along with consolidated economic prosperity, can propel them into 'safety'.

The rest of this thesis is organized as follows: Chapter Two provides a brief summation of the existing literature on both the causes and the level of violence in civil wars, while the limited works on the consolidation of states against civil wars will be discussed in detail in Chapter Six. Chapter Three lays out the theoretical foundation upon which this paper is built. Chapter Four discusses the data and the methodology that relate to the risk exposure to civil war onset and estimates the statistical models relevant to the specified relationships. Chapter Five discusses the data and the methodology used to generate the results on the variation in the level of violence in civil wars and estimates the statistical models relevant to the specified relationships. Chapter Six elaborates on the consolidation literature and discusses the data, methods and statistical results relevant to a state's ability to consolidate against civil war. Chapter Seven features an overarching summation of the work, which includes a discussion of the study's limitations as well as areas for future research.

Chapter 2:
Literature Review

This section divides the literature into two sections. The first will go over the literature that discusses the risk exposure to civil war onset and the second will expand on the literature that assesses the level of violence unique to civil wars. Given the dearth of literature on what makes states consolidate against the risk exposure to civil wars, the argument of consolidation against civil wars is outlined and explained in detail in Chapter Six (Consolidation Against Civil War).

2.1. What Makes States Vulnerable to Civil War?

There are multiple answers to the above question. The abundance of answers is largely due to three factors. First, some say that the coding of civil war onset has grown increasingly ambiguous (Sambanis 2004). When discussing the coding of civil war onset, two main "contending" works are the Correlates of War Dataset (or COW) (Sarkees *et al.* 2010) and the Armed Conflict Dataset (or UCDP/PRIO) (Gleditsch 2002; Petterson & Wallensteen 2015). The main distinction between these datasets lies in the substantively different threshold of deaths upon which civil war onset can be coded. In fact, while the COW dataset codes a civil war onset as corresponding to a minimum of 1000 yearly thresholds, the PRIO dataset registers instances of civil wars whenever the number of battle-related deaths reaches at least 25 in a year[3].

There also seems to be a strong divide within the literature as to the type of variables that can aptly explain the onset of a civil war (Dixon 2009). Authors such as Collier *et al.* (1998) argue that civil war onset, through the mobilization of the rebels, is strongly conditioned by initial

[3] Note that the section on the exposure to civil war utilizes the COW parameter of civil war while the one on the violence of civil war considers the definition of civil war that PRIO provides. The reason is explained in the research design section.

income, or per capita GDP that the population enjoys[4]. Their findings suggest that civil wars, when fought, are symptomatic of material or more precisely economic grievances (Collier *et al.* 1998).

Another contending body of literature has focused on the impact of ethnicity on the likelihood of civil wars, which is also fraught with competing explanations. In fact, while Fearon *et al.* (2003) [5] suggest that ethnic diversity fails to predict civil war onset, Lane (2016) suggests that not only can ethnic divisions beget civil wars, but that the ethnic mobilization within a given state spatially spreads within and outside the state experiencing conflict. Moving away from the ethno-geographical dynamic of civil war onset, Cederman *et al.* (2013) posits that ethnic civil wars are much more likely to materialize after the second election cycle in a state on a democratizing trajectory (that has only recently implemented elections). In the work of Cederman *et al.* (2013), the most decisive results relate to the impact of ethnic group exclusion[6] on the probability that an ethnic civil war will erupt. Those results are significant at the .01 level and are robust to the inclusion of multiple variables, namely whether the newly implemented elections were competitive and the number of elections. However, one has to be mindful of the dichotomy of ethnic *versus* non-ethnic civil wars. In fact, while the work of Cederman *et al.* (2013), among others, makes the distinction between ethnic and non-ethnic civil wars, it fails to explain why certain factors are better at explaining ethnic civil war onset while failing to provide an element of explanation to the occurrence of non-ethnic civil wars. This is largely due to a failure in theorizing

[4] Adhering to a similar rational choice approach-as the one in the work of Collier *et al.* (1998)- more recent works have explained the likelihood of conflict through the mobilization of rebels and their subsequent chances of launching consolidated insurgencies through well-thought out *rebel tactics* (Buneo de Mesquita 2013).

[5] Their main thesis is that current civil wars are merely a prolongation of protracted conflicts of the 1950s and 1960s (Fearon *et al.* 2003).

[6] By group exclusion, the authors allude to the notion that politicians in democratizing states tend to run their electoral platform on narrow and ad hoc ethnic cohorts, which *ipso facto* favors some ethnic groups while excluding others.

that reflects the complexity and the fundamental difference between ethnic grievances and grievances that are ethnically agnostic[7].

Note that throughout this thesis, ethnicity, albeit controlled for, is not the center of analysis to either the risk exposure to civil war onset or to civil war violence. This is mainly because this study focuses on which variables contribute to the onset of specific types of civil war. The parameter of the type of civil war, throughout the study, corresponds to the mode of fighting the civil war. In other words, this work avoids answering the question of *why* civil wars are fought, but instead attempts to provide an element of an answer to the question of *how* civil wars are fought. Additionally, this paper also attempts to discern which variables make states most vulnerable to which type of civil war.

It should be noted however, that while there seems to be contention within the literature on civil war causes, there is strong agreement or at least consensus on the notion that wealthier states seem to consolidate against the risk exposure to civil war (Dixon 2009)[8]. Dixon (2009) conducts a meta-analysis of quantitative research on civil war, and deduces that a total of nine quantitative works, which looked at civil war onsets, found a negatively substantial and significant effect (at the .01 level) of per capita GDP on civil war onset; an additional six works found a similar relationship at the .05 level (Dixon 2009). Also, out of a total of 45 quantitative works that accounted for the effect of per capita GDP on civil war onset[9], only one work found a positive relationship between per capita GDP and civil war onset.

[7] See Sambanis (2001) for exceptions.
[8] See Dixon (2009) for an interesting and exhaustive overview of a substantial part of the quantitative literature on the risk exposure to civil war onset since the 1990s.
[9] This is including various types of per capita GDP; such as lagged one year per capita GDP, or logged versus not logged, etcetera.

2.2. How is Civil War Violence Defined? And How Can it be Measured?

Civil war violence has generally been conceived of as a completely irrational and "*chaotic*" phenomenon (Dufort 2014: 207): words such as '*senselessness anarchy'* (Kaplan 1994) [as cited in Cramer (2002)], '*incomprehensible',* '*wanton*' (Ganley 1997) [as cited in Kalyvas 1999], or even '*pure folly'* (Tuchman 1984) may hinder the complexity behind the phenomenon of violence and reduce the occurrence of violence to simple episodes of passion taking over reason. This paper is based on the premise (or the assumption) that the violence in civil wars is actually motivated by tactical moves at the disposal of the warring actors[10]. This is not to say that ad-hoc violence isn't relevant to winning the war, but that both the incumbent state and the main insurgent challenger will typically have to carry out a strategy whereby at least a minimal level of intentional lethal violence against civilians is committed in order to have a chance at winning the war (Arjona *et al.* 2015).

When it comes to the quantitative study of civil war violence, the researcher has typically been given the choice between two types of disaggregation. The first disaggregation relates to whether to focus on the variation in the level of violence at a macro or at a micro-level[11]. In this study, the variation in the level of violence is analyzed both on a macro and micro-level (separately). Essentially, violence that occurs at a macro-level is one where the aggregate number of deaths is reported per year and at a state or national level. On the other hand, micro-level violence usually records deaths per time period (daily, weekly, monthly, and so forth) and typically assesses the level of violence at a municipal level, or sub-nationally in general. The second disaggregation aims at distinguishing between combatant and noncombatant (or civilian)

[10] After all, one cannot possibly expect to find significant results if the outcome one is studying never behaves according to some type of systemic pattern or never adheres to some type of coherent variation over time.
[11] The reason for focusing on both levels of analysis is amply explained in the research design section.

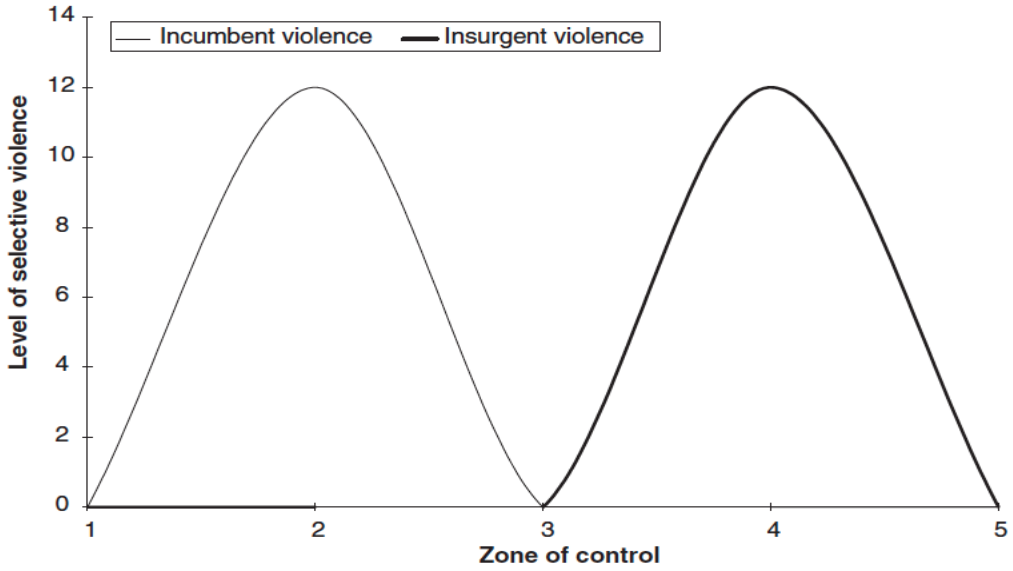
casualties over the course of a civil war. This research first aggregates civilian and combatant casualties, before isolating instances of violence perpetrated exclusively against civilians[12]. Other works have taken a similar approach when analyzing civil war violence (Kalyvas 2006; Kalyvas *et al.* 2009; Balcells 2010; Balcells *et al.* 2014). Thus, a first observation to make is that both combatant and civilian deaths, considered together or separately, typically gauge the level of overall violence in a given civil war. In other words, the higher the number of combatant and civilian deaths, the more lethal (and thereby violent) a given civil war.

There are different parameters to consider when analyzing the level of violence. Some have considered territorial control (Kalyvas 2006; Kalyvas *et al.* 2009), others the geographic pattern of violence *diffusion* or *relocation*; however, both are a function of the intensity of violence (Gulden 2002; Schutte and Weidmann 2011). Kalyvas (2006)[13] generates a typology of control zones. Kalyvas (2006) defines control zones as a function of the extent to which a population has access to either the incumbent or the insurgent. This work posits that control zones can be derived from a continuum compiling a total of five zones. Control zone 1 represents total control of the incumbent when it has successfully "destroyed most or all insurgent clandestine cells and are able to prevent the rebels from entering or operating with any effectiveness" (Kalyvas 2006). The reciprocal opposite of this scenario where the insurgent exercises full control characterizes control zone 5. Control zone 2 represents a zone where the incumbent exercises "secure but incomplete control" (Kalyvas 2006). Insurgents can still enter this zone in a sporadic fashion, "mainly at nights" (Kalyvas 2006). The reciprocal opposite is control zone 4 only in favor of the insurgent. Finally, control zone 3 is of quasi-equal incumbent and insurgent control. Kalyvas posits that this

[12] The reason is also explained in the research design section.
[13] The work of Kalyvas (2006), T*he Logic of Violence in Civil War*, for which he won the Woodrow Wilson Foundation Award, is a remarkable micro-level study of the Greek civil war (1943-49), which combines rigorous qualitative and quantitative designs.

zone (zone 3) experiences the least violence (Kalyvas 2006). This spatial typology of control at the disposal of either warring actor directly reflects the direction and magnitude of violence perpetrated against civilians. Kalyvas (2006) muses that the most lethal control zones are 2 and 4, whereby the incumbent and the insurgent enjoy secure but incomplete control over the population, respectively. Below is a graphical visualization of this scenario[14].

Figure 2.3 Predicted Levels of Selective Violence as a function of Territorial Control



Source: Compiled by Kalyvas 2006; See *The Logic of Violence*, p. 132.

Other scholars have more recently moved away from analyzing how the shifts in territorial control produce a variation in the level of violence in order to assess the extent to which elections, thus political ideology more broadly, influences the magnitude of violence perpetrated against civilians during civil war. In fact, the work of Balcells (2010) designs a micro-level dataset introducing 1062 municipal-level observations in the region of Catalonia during the Spanish civil war (1936-39), and finds that civil war violence against civilians substantially increases whenever

[14] See Kalyvas *et al.* 2009 *The Dynamics of Violence in Vietnam: An Analysis of the Hamlet Evaluation System (HES)* for a micro-level quantitative application of the above theory on another case of civil war.

pre-war political competition between parties reaches parity (or a close margin of victory), at the municipal level (Balcells 2010).

In conclusion, while some of the literature has discussed the causes of civil war onset, this study instead assesses the extent to which states are exposed to civil war[15]. While one disaggregation in the literature on civil war distinguishes between ethnic and non-ethnic civil wars, this work will instead distinguish between the mode of fighting peculiar to each type of civil war: conventional, irregular, and symmetrical nonconventional. While contention as to the main drivers of civil wars is present in the literature, there is consensus on the notion that states with high per capita GDP resist civil wars (Dixon 2009). While the literature on civil war has considered ethnic and religious fractionalization as time-invariant, the design of those variables in the first part of this study generates variation from one observation to the next. There also exists a consensus in the literature on civil war violence as far as the notion that violence can be operationalized by accounting for combatant and civilian deaths over the course of a civil war. While the literature on civil war violence has more than often assessed the macro-level variation in violence over the course of civil wars, this study distinguishes between macro and micro-level variations. This research also focuses on both combatant and civilian deaths before exclusively focusing on civilian deaths in order to identify a unique and clear pattern in both types of violence.

[15] In fact, discussing causation implies a full impact of a covariate on civil war onset. On the other hand, assessing the exposure to civil war presupposes varying degrees of exposure and vulnerability to civil war. We find the latter concept more fitting than the former when studying civil wars, as it is hard to establish pure causality between such a complex phenomenon that is civil war and a few covariates.

Chapter 3:
Theoretical Framework

This chapter provides the framework for the entire study and discusses the theories of the types of civil wars, its causes, contributors and mitigating factors, as well as how states may consolidate or protect themselves from the occurrence of civil wars. This chapter is organized into four main sections.

3.1. Ideal Types of Civil Wars

This work uses the definition of civil war offered in the work of Kalyvas (2006): a civil war is defined as "*armed combat within the boundaries of a recognized sovereign entity between parties subject to a common authority at the outset of the hostilities*." This definition seems to generate parsimony and clarity regarding what civil wars constitute (Kalyvas 2006: 5; 17).

Also, this work conceives of civil wars as a disaggregation into three ideal types: *conventional, irregular*, and *symmetrical nonconventional* civil wars. The aforementioned terminology of *conventional*, *irregular* and *symmetrical nonconventional* civil wars is borrowed from the work of Balcells *et al.* (2014). In this study, the type of civil war becomes a function of the military power each actor—rebels relative to incumbents—have at their disposal. The authors develop a framework whereby conventional and symmetrical nonconventional civil wars showcase parity in rebel and incumbent military power, while irregular warfare is fought only when the incumbent enjoys clear military supremacy over the rebels. Also, while conventional warfare implies the use of sophisticated weaponry on both sides, irregular warfare is fought only when the incumbent enjoys militaristic superiority over rebel forces (in terms of technological advancement). Finally, symmetrical nonconventional warfare presents a platform whereby both the incumbent and rebels enjoy equally weak and rudimentary weaponry (Balcells *et al.* 2014). The case of the Liberian civil war (1989-96) illustrates the conjuncture of symmetrical

nonconventional warfare while the cases of Libya (2011) and the ongoing war in Afghanistan are examples of conventional and irregular warfare, respectively (Balcells *et al.* 2014).

One can generalize this framework to many different cases of civil wars. In fact, the ongoing case of the Syrian civil war can arguably be categorized as a conventional civil war, whereby rebel forces such as the Free Syrian Army (FSA), being militarily and logistically backed by foreign regional and international powers (at least between 2012 and 2013), can potentially match incumbent military power. The case of the Greek civil war (1943-46) arguably embodies irregular warfare, with the occupying powers of Italy and Germany enjoying greater incumbent military power relative to communist rebels. The latter case is especially relevant in the region of Argolid, or in Eastern coastal Greece (Kalyvas, 2006). Finally, given the light weaponry that both the incumbent and the mainly Hutu militias (playing the role of rebels) had at their disposal, the Burundi civil war (1992-2005) becomes arguably compatible with symmetrical nonconventional warfare.

The aforementioned distinction between conventional, irregular, and symmetrical nonconventional warfare is pertinent for two main reasons. First, this distinction allows for an expansion of theories on civil wars across time and space. Further, as mentioned above, the three categories of civil war have been successfully operationalized in three different empirical cases, during three distinct epochs and on three different continents. The second reason this framework is useful to this study, but also to future works on civil war, is on how the focus on the aforementioned nomenclature relates to the notion of remaining subjectively uninvolved in the phenomenon in question. In other words, this distinction made between types of civil wars can help explain the dynamics of war within a state regardless of demographic or societal variables such as ethnic salience that more than often, in the literature, substitutes for the actual examination

of war dynamics in instances of civil wars. Consequently, one ends up studying ethnic or religious salience and its exogenous impact on civil war onset. The distinction between civil war types should help to explain war dynamics that are endogenous to the civil war phenomenon itself, thus reducing measurement error, *inter alia*, by gaining in accuracy and precision when evaluating the risk exposure to civil war. Consequently, predicting and analyzing civil war onset through this distinction between types of civil wars should help the research and policy community gain an analytical leverage over a complex phenomenon that cannot be fully explained by variables (such as ethnic salience) inherently exogenous to the conflict itself.

3.2. Exposure to Civil War

In this section, the determinants that can potentially explain variation in the type of civil war and subsequently analyzing the risk exposure to civil war undergo a disaggregation into three different types of variables: political, economic, and demographic. Two main political variables should explain variation in the risk exposure to a specific type of civil war. The first is whether the incumbent has consolidated his/her regime and seized power unconstitutionally. This variable should reflect episodes of democratic breakdown, or at least fragilization, as a result of incumbent takeover[16]. Typically, such cases are preceded by a consolidated increase in democracy scores. One can think of the case of Peru, which saw the rise in its democracy scores (for 12 uninterrupted years) before the takeover of Fujimori in 1992. The second political variable to be introduced is whether the executive is independent from or subjugated to the military.

The theory here is straightforward: it is argued that political variation, gauged by the three aforementioned variables, should be more susceptible to the outbreak of conventional civil wars while failing to explain the exposure of states to both irregular and symmetrical nonconventional

[16] Note that the variables democratic propensity and incumbent consolidation correlate perfectly with each other three percent of the time.

civil wars. Contestation of power within, among and outside of political parties have typically crystalized the antagonism that stretches from the political ideology endorsed by the extreme left to the extreme right, without forgetting less radical ideologies of left, center of left, center of right, and right. Whenever a given polity is democratic, or whenever the political expression of citizens and that of emerging political parties have a fair chance at influencing political outcomes, political disputes are resolved peacefully, and typically through the ballot box. This is relevant for both liberal and radical democracies, whereby the protection of private property and that of minority groups constitute the democratic ideal in the former example of democracy while majority rule facilitated by constituent assemblies and supported by plebiscitary structures of direct voting champion the ideal of the latter (Ellner 2012). Whenever political expression is limited, contestation becomes more likely to be met with violent repression by the incumbent state. One of three things can follow: the current incumbent state can survive by ignoring civilian demands while relying on a highly capable military to subdue civilian protests—the aforementioned resembles what happened in Bahrain in 2011. Bahrainis that took to the streets (peacefully) asking for more political representation were violently crushed first by Bahraini authorities and then by Saudi security forces. The second scenario is that the incumbent can be toppled as result of a radical and powerful social uprising that has decisively consolidated and has in a sense stripped the incumbent government from any form of political legitimacy. This was the case of Egypt in 2011, which saw the demise of Mubarak's regime, who had served close to a forty-year mandate. Finally, a civil war can arise as a result of the resistance of the incumbent state and a high (at first) civilian propensity to oppose this resistance. Such was the case of Syria in 2011. In fact, after what had been recognized as a peaceful protest in Dera'a (a Southern rural Syrian locality), the 4th armed division (incumbent death squad) retaliated by successfully clearing the protest. That same day,

dismantled after incumbent intervention, a few civilians burned down the headquarters of Al Ba'ath (the incumbent) leading to a spree of arrests and a degeneration into the firing of live ammunition by the incumbent that lead to the deaths of fifteen civilians after a two-day assault (Holliday 2013). Following that protest in Dera'a, a nationwide anti-governmental protest began on March 25th to address popular grievances (Holliday 2013); which eventually propelled a majority of Syrian localities (mainly rural at first) into a situation of civil war[17]. While the war in Syria has not been fought on political grounds one can argue, it still represents a civil war with political origins whereby civilian demand for more freedom of expression was the root cause for regime contestation. Therefore, it is argued that conventional civil wars, unlike irregular and symmetrical nonconventional civil wars, are more likely to occur whenever political freedom is at the forefront of popular grievances.

In contrast to conventional civil wars, the theory presented in this study suggests that economic grievances are more likely to contribute to civil wars of an irregular nature. The explanation is straightforward: irregular civil wars imply an asymmetry in military power between the incumbent state and the insurgent. The incumbent can use heavy weaponry such as canons or deploy airstrikes while the insurgents hide and rely on surprise attacks while equipped with less lethal weaponry (Kalyvas 2006). Since those wars militarily favor incumbents, by nature, the insurgents find civilian collaboration, or at least compliance with the rules they attempt to impose in localities over which they control, crucial for their survival. Thus, it is argued here that economic variables can serve the insurgents if the state is in a recession (negative yearly change in GDP growth) or if the wealth of the civilians is deteriorating (negative yearly change in per capita GDP). The former economic variable gauges the extent to which the economy creates (or diminishes)

[17] Although coding procedures do not generally code March 2011 as the start of the Syrian civil war, this month undeniably catalyzed the start of the war.

employment opportunities[18]: it is argued that economic recession begets unemployment, which *ipso facto* facilitates the recruitment of rebels and the consolidation of the insurgency. Likewise, deteriorating per capita GDP can encourage civilians to join the insurgency as the opportunity cost of not joining is mechanically reduced while not joining the insurgency can also mean that the status quo, or deteriorating living standards, is likely to remain the same, which is a situation any civilian would rationally want to avoid. Therefore, decreasing standards of living, exacerbated by an economic recession, should make joining the insurgency more appealing to the civilian population.

Finally, the third component of the theory, which addresses the exposure to civil war, posits that demographic variables, namely ethnic and religious fractionalization, should explain an increase (or decrease) in the exposure to the risk of civil war of a symmetrical nonconventional nature. Ethnic and religious fractionalization, always coded as time-invariant in the literature (Fearon *et al.* 2003; Eichengreen *et al.* 2008; Svolik 2015), cannot *produce* civil wars. Although seemingly trivial at face value, this observation must be made, as it is important to denounce an epistemological fallacy when observed: a constant, or a time-invariant variable such as ethnic or religious fractionalization, cannot, by nature, generate variation in the dependent variable, or in this case civil war onset. That is why this study posits that higher ethnic and religious fractionalization scores only expose states to civil wars when the state is increasingly autocratic[19].

[18] Unfortunately, it is extremely hard, if not impossible, to find reliable and complete data on unemployment rates in a world sample between 1946 and 2008. Thus, economic recessions should proxy for unemployment. Note that GDP growth is a blunt proxy for unemployment, especially if one does not have data on hiring in public versus the private sector, as the private sector might be thriving, even at times of economic recessions. Economic recession (or decreasing GDP growth rates) is also argued to have an impact that is consistent with civil war risk. Thus, it is assumed here that economic recessions do not have a delayed or lagged effect on structural unemployment, which is hard to defend. Nonetheless, GDP growth can arguably be considered the optimal proxy for unemployment.

[19] This design of both ethnic and religious fractionalization indices allows for variation in those variable. Thus, as we will see in chapter three, both ethnic and religious fractionalization indices are *not* time-invariant, unlike what is more than often the case in the literature.

Also, persuasive religious and ethnic rhetoric appears to be more prevalent during civil wars that are fought using light weaponry (Balcells *et al.* 2014).

To reiterate, the theory proposes that conventional civil wars are most susceptible to political grievances, while irregular civil wars are motivated by deteriorating standards of living, and symmetrical nonconventional civil wars are more likely in autocratic states with higher ethnic and religious fractionalization indices.

3.3. The Logic of Violence in Civil War

This section explores the dynamics of violence inherent to civil wars. Before theorizing the patterns of violence associated with each type of civil war, a few key parameters of violence deserve explicit attention. The number of battle-related noncombatant (i.e. civilians) and combatant casualties gauges the level of violence in a given case of civil war, regardless of its type. However, one might argue that recording the deaths of military units might not be indicative of the violence that is endogenous to civil wars. In fact, the violence perpetrated against combatants can also gauge violence in regular, or interstate wars, thus not necessarily capturing the intensity indicative of civil war violence. That is why this study disaggregates civil war violence into two categories. The first looks at both civilians and non-civilians (or combatants) fatalities during civil war. The second isolates combatants and strictly analyzes the number of civilian deaths as a result of civil war. Also, there is no hierarchization of violence in this paper: in other words, there is no disaggregation of different types of violence that lead to the "absolute violence" (Sofsky 1998), or death; in this sense, violence materializes whenever death occurs. Simply put, kidnapping, torture, extortion, mutilation (to name a few), while being ubiquitous and almost intrinsic to civil wars (Kalyvas 2006), are not disaggregated into further levels or strata of violence. Thus, violence is less a process than it is an outcome. Also, ethnic violence, while also being widely propagated

across a myriad of civil wars (Lacina 2006; Lilja *et al.* 2011; Di Salvatore 2016), is not the center of analysis in examining differential patterns of civil war violence[20].

One crucial reason to focus on civilian deaths (by distinguishing between combatant and civilian casualties) is that the violence committed against civilians during a civil war more than often becomes a set of tactics available to both the incumbent state and the insurgent. In fact, Kalyvas (2006) argues that civil war violence is a method used to influence civilian collaboration with either the incumbent or the insurgents depending upon the territorial control sought by either the incumbent or the rebels, or both. In other words, inflicting continuous violence upon civilians can be a way for a warring actor (whether the incumbent state or insurgent) to force civilians to choose a side, or deter the same civilians from joining the insurgency (or counterinsurgency). Thus, the use of violence can change (directly) the dynamics of the violence associated with the civil war itself, while it can also change (indirectly) the dynamics of the civil war outcome, which typically makes a clear winner emerge.

Looking back at the typology of civil wars discussed in Section 3.1, the level of civil war violence becomes a function of the type of civil war. Conventional civil wars are fought when heavy militaristic power used by the insurgent matches that of the incumbent state. Thus, at power parity, the implication for the use of violence can be said to resemble a "winner take all" logic, whereby winning the war is determined by the maximization of the propensity for violence on the battlefield. Thus, the function of violence of the incumbent intersects with that of the rebels at one point, if and only if, $\pi_t^i = \pi_t^r \sim 0.5$, where the probability of the incumbent winning the war at time *t* becomes equal to that of the probability of the rebels winning the war at the same time *t*, which should approximate an even chance. The random (winner) outcome itself generates a considerable

[20] That being said, ethnic fractionalization indices are accounted for in this study. Thus, ethnic violence becomes an offshoot (if any) of overall violence.

increase in violence on the battlefield namely because of the uncertainty in predicting a clear winner. Consequently, the theory regarding violence unique to conventional civil wars remains highly concentrated on the battlefield. Thus, the violence in those wars perpetrated against civilians decreases as both incumbents and insurgents devote their resources strictly to military survival[21].

Likewise, this framework equally applies to symmetrical nonconventional civil wars. It is argued here, however, that given the weak and light weaponry at the disposal of both incumbents and rebels in symmetrical nonconventional civil wars, the level of violence can be assumed to be (during the entirety of the conflict) lower than in conventional civil wars. One can conceive of this difference between aggregate levels of violence between conventional and symmetrical nonconventional as a variation in degrees of violence, and not an overall downward shift in the function of violence.

Finally, when it comes to irregular civil wars, the function of violence representing the behavior of both incumbents and rebels can be modeled as follows: $\pi_t^i > \pi_t^r$ whereby the probability of the incumbent winning the war at time *t* is greater than that of the rebels winning the war at the same time *t*. This framework encourages the insurgent to coerce the civilian population, as it cannot afford to *directly* confront the incumbent state. Thus, irregular civil wars, while projected to cause fewer deaths on the battlefield, should be deadlier for civilians. Also, in irregular civil wars, the incumbents can typically identify which regions (or even neighborhoods) are sympathetic with the causes championed by the insurgents. Therefore, tactics, other than direct incumbent violence against civilians, are available: such tactics can range from besieging rebel-controlled areas, differentially providing basic public goods such as electricity to pro-incumbent areas while depriving pro-rebel areas of such goods (De Juan *et al.* 2015), starvation methods can

[21] One can argue that the violence, given the framework of an all winner-logic, is highest on the battlefield when the civil war is fought conventionally, and not in civilian-inhabited areas.

also be used with more ease by the incumbent as it is assumed that the latter enjoys quality information to track down the rebel presence via a set of consolidated counterinsurgency tactics. It should be noted; however, that the aforementioned tactics are considered indirect forms of violence, unlike the act of killing itself. Nonetheless, such tactics undeniably contribute to the overall rise of direct violence against civilians and are theorized to be more prevalent in irregular civil wars than in the other two types of civil war.

The literature, to a great extent, has overlooked those tactics in the study of civil wars. One can argue that the aforementioned tactics are endogenous to civil wars, thus vital to account for whenever violence is the key parameter of study in a given civil war. The focus on the type of violence perpetrated against civilians during civil wars should provide elements of answer to a broader study of civil wars, namely the quality, durability, and sustainability of both incumbent and insurgent governance, which more than often relies on (at least) a minimal level of intentional violence committed against civilians (Arjona *et al.* 2015). To fill this gap in the literature, the type of weaponry used and the tactics that are available to both the incumbent state and the insurgent are at the core of the coding of the type of civil war[22].

To reiterate, the least amount of violence perpetrated directly against civilians in civil wars are of symmetrical nonconventional nature, followed by conventional and irregular civil wars, respectively. The least deadly mode of fighting on the battlefield is of irregular nature, followed by symmetrical nonconventional, and conventional warfare, respectively. It is important to note that the aforementioned theoretical expectations more or less[23] resemble those stated in the work

[22] See Appendix B for a graphical visualization of how the type of weaponry and the tactics used by the warring actors shape the probability that a civil war will be fought in conventional, symmetrical nonconventional, or irregular mode.
[23] While the degrees of violence per type of civil war more or less match the expectations in the work of Balcells *et al.* (2014), the theory on civil war violence provides a fist departure from Balcells *et al.* (2014).

of Balcells *et al.* (2014). Thus, this part of the overall study indirectly bases its theoretical framework on the one developed in the aforementioned work.

Crucially, three main departures from the work of Balcells *et al.* (2014) deserve further elaboration as they are purported to contribute to the greater literature on civil war violence. Firstly, the choice of models used in the data on micro-level violence, is deemed to be more fitting to capture the level of overall violence committed against civilians, as the statistical models are estimated using count data, which measures the number of civilian deaths as opposed to ordinal logit models which are found in the study of Balcells *et al.* (2014). Also, this study categorizes the level of violence as the risk of succumbing to specific thresholds of violence, based on gradual levels of intensity (a total of three levels). In other words, it is argued here that count data and the subsequent choice of statistical models provide a more objective and practical measure of violence as opposed to categorical outcome variables. Additionally, this work takes into account the specific type of weaponry used, as opposed to merely categorizing the weapon as being of light or heavy ballistic power as it is the case in the work of Balcells *et al.* (2014). This variation, when linked to the type of tactics the incumbent state or the insurgent uses, as we will see in the forthcoming analyses, should help in decisively identifying whether a civil war is conventional, irregular, or symmetrical nonconventional. Thirdly, consistent with the tendency to direct violence against civilians through the use of weapons, this study identifies and builds a framework of civil war violence perpetrated against civilians by introducing twelve different tactics that are available to both the incumbent state and the insurgent, which are arguably indicative of the underlying day-to-day practices of civil war. Those same tactics are also reflective of the power dynamic between the two warring actors. In fact, if direct shooting is the weapon of choice deployed by both rival actors, does that make the civil war automatically conventional? It is argued in this work that

accounting for such tactics, which are used with specific weaponry, should decisively define the nature of the civil war being fought when only considering the type of weaponry fails such a demanding task. This expansion of the theory, through the three aforementioned orientations of the theory, should pave the way for future micro-level civil war studies. This enhanced visibility of civil war practices and the underlying war dynamics should help to define a clear dyad of dominant *versus* dominated combatant over the course of a civil war and across multiple regions at the subnational level, which as the results suggest, has strong implications for the dynamics of civil war violence. In turn, through this theory, achieving greater visibility has three positive externalities: first, it should help the policy community develop pertinent micro-level measures that correspond to the empirics of each state that is at high risk for civil war onset. Moreover, greater visibility can also identify tactics, such as besieging or starvation (among others) of the civilian population, and in turn allow for the formulation of policy to address those practices, of which civilians ineluctably pay the price. Finally, this greater visibility should help in identifying the level of violence, its scope, and the perpetrator of that violence.

The theory also suggests that polities with high democratic scores that are at war should witness an overall decrease in the level of violence as the civil war progresses, both on and off the battlefield. Those polities, given their democratic propensity, relative to lesser democratic or non-democratic regimes, should experience shorter civil wars. This suggestion is in opposition to less democratic or outright undemocratic polities as those are more likely to experience protracted civil wars[24], which can explain an increase in the casualties of civilians and combatants alike. Costa Rica, a consolidated democracy[25] experienced a six-week civil war in 1948. Even though it "cost

[24] The duration of the civil war is not the focal point of this study, even though it is controlled for in the models. It is only assumed that higher democratic polities will be expected to put an end to the civil war sooner than in their less democratic or undemocratic counterparts.
[25] Polity IV registers a consolidated score at +10 (the highest democratic score) for Costa Rica from 1946 to 2015.

so many lives" (Lehoucq 1991:57), one can argue that it would have cost many more lives if the government of 1948, "being *Calderonista* in inspiration" (Lehoucq 1991:57 original emphasis), had decided to resist instead of surrendering "under terms that protect[ed] regime members from retaliation" (Booth 2008:725). It is also theorized that an overall decrease in the level of violence during civil wars, both on and off the battlefield, should derive from higher levels of yearly per capita GDP and GDP growth rates. The reason is straightforward. As mentioned in Section 3.2, per capita GDP and GDP growth rates represent (in this paper) the standards of living of individuals and the risk exposure to unemployment, respectively. Therefore, when standards of living are deteriorating, and when unemployment is looming, the insurgency increasingly appears more legitimate to the civilian population and joining the insurgency becomes more likely. Thus, it is argued that the chances of a failed insurgency, or a failure for the latter to launch sustainable attacks against the incumbent state increase as a result of rising per capita GDP and GDP growth rates. Consequently, the death toll of combatants and civilians should decrease overall, on and off the battlefield. Also, given that high ethnic and/or religious fractionalization can be manipulated by civil war brokers to mobilize incumbent sympathizers (or insurgent supporters) to fight the rival actor; this situation should increase the overall level of violence. Evidently, in the context of civil war, civil war brokers within states that are ethnically and religiously homogenous find it hard to appeal to the one of the warring actors by instilling ethnic and religious divisions. Therefore, the higher the ethnic and/or religious fractionalization of a state, within the context of civil war, the higher the level of violence[26].

[26] It should be noted, however, that the theory drawing on the relation between ethnic/religious fractionalization and higher levels of violence is based on approximative expectations, as we are not aware of the extent to which civil war potential participants find the rhetoric of ethnic and religious divisions appealing, persuasive, and for which it is worth joining one of the warring actors.

3.4. Consolidation Against Civil Wars

In contrast to the previous sections, this segment of the overall theoretical framework deals with assessing the risk of civil war to which states can be exposed. While the first section of the theory assesses the exposure to civil wars, and the second section discusses the evolution and the differential patterns of violence *during* civil wars, this part of the theory estimates to what extent states (that have or have not experienced civil wars in their recent history) have consolidated against the risk of civil war. Also, this study evaluates the extent to which states become resistant to civil war, which should generate a more lucid understanding of the civil war phenomenon and help in predicting the varying risks of civil wars throughout the contemporary world.

This section builds upon three empirical configurations that derive from three distinct premises: first, all modern states, in the Westphalian sense, are highly civil war-prone. Second, states can transition toward stable institutions and consolidate against the risk of civil wars. Third, states can transition toward stable institutions while failing to consolidate against the risk of civil wars. This theory parallels the one constructed in the work of Svolik (2015) on democratic transitions and democratic consolidation[27].

Of important note is that this part of the theory does not attempt to measure the consolidation against the risk of civil war onset directly; the latter risk is treated as a latent quality to be inferred rather than being measured (directly). Thus, the outcome one becomes interested in examining does not relate directly to the probability of consolidation against the exposure to the risk of civil war, but instead examines more closely a significant decline in the probability of relapsing into (or succumbing for the first time to) civil war. Using change-point modeling based upon Bayesian analysis, the results should indicate a clear point in time upon which one can

[27] See Svolik (2015) *Which Democracies Will Last? Coups, Incumbent Takeovers, and the Dynamic of Democratic Consolidation*.

decisively assert that a given state is decisively moving toward consolidation against civil war. Also, the logic of this part of the overall study conflates all civil war types together, as one can argue that if a state undergoes any of the three types of civil wars, that state has thereby failed to consolidate against the risk of civil war. In other words, any state that succumbs to any type of civil war, no matter how brief or how 'mild' in severity, can be said to have actually failed to consolidate against the risk of civil wars, in general[28].

Following a path dependent approach, which posits that "once a country or region has started down a track, the costs of reversal are very high" (Levi 1997: 27) [as cited in Pérez-Liñán *et al* (2013)], politically, historically, and economically rooted patterns of development, unique to each country (or groups of countries), should explain why some states consolidate against the risk of civil wars while others do not. Civil wars can be conceived of as an implosion of the social contract (as explained in section 3.1); or what Rousseau has also referred to as the social pact, whereby equality by covenant and by right substitutes for inequalities in intelligence and strength to the benefit of the overall communal interest (Rousseau 1968: 25). Thus, the determinants of political, historical, and economic nature that guarantee the preservation of the social contract will also help to support the implication that a given country has, in fact, consolidated against the risk of civil war. Crucially, such determinants must be conceived of as *distal* factors when explaining the variation in the probability of consolidation against the risk of civil wars. Focusing only on the 1946-2008 period and analyzing proximal determinants would most likely result in endorsing a temporal bias, since civil wars are as old as the humans who fight them. Consequently, the data goes back to the 1820s and looks at a global sample.

[28] The variation between not consolidating and consolidating against the risk of all types of civil wars is deemed (in this study) to be more valuable than the one between consolidating and not consolidating against a specific type of civil war.

When it comes to causality, this paper theorizes that a rigorous democratic culture makes the social contract ever more resilient, thereby making countries immune to civil wars, after meeting a certain threshold for time passed (in years). Also, consolidated and thus uninterrupted periods of economic prosperity or positive GDP growth rates should also help states consolidate against the risk of civil war. Finally, a history of decisive increase in the wealth of a constituent population in a given country, measured in yearly per capita GDP, should create a culture of wealth that more or less applies to every individual within that country, thereby explaining a significant increase in the probability of consolidation against the risk of civil wars; because civil wars are costly for everyone involved, especially after a consolidated increase in general standards of living, all parties involved would want to avoid a typical loss-loss situation as a result of a civil war. Consequently, a culture of wealth along with one whereby economic growth is sustained should help states consolidate against the risk of civil war.

Chapter 4:
Exposure to Civil War

The following section represents the crux of this study and includes Chapters 4, 5 and 6, which are essentially self-contained encompassing analyses of the three major themes of this study. This Chapter deals with designing classical statistical models to capture those factors that explain the rise or decline in the odds of civil war onset if the same set of experiments were to be reproduced repeatedly over time, while Chapter 5 sheds light upon the dynamics of violence perpetrated against noncombatants in conventional, irregular, and symmetrical nonconventional wars, respectively. Finally, Chapter 6 evaluates the extent to which countries consolidate against the risk of any type of civil war, that is, conventional, irregular, or symmetrical nonconventional warfare.

4.1. Exposure to Civil War: Research Design

To explain the risk exposure to civil war onset, this study adopts a macro-comparative design that looks at a global sample of civil war onsets from 1946 to 2008. A cross-sectional panel sheds light on the explanatory power of covariates to increase or decrease the odds of civil war onset. A global sample should theoretically provide the most exhaustive and the least spatially biased sample possible; as opposed to focusing on specific individual countries or regions. The temporal coverage associated with the population chosen covers the dynamics of cold war politics (1946-1992), to which some have theorized a substantive change in the external military support provided to both incumbents and rebels fighting civil wars (Kalyvas *et al.* 2010). The period of 1946 to 2008 also encompasses the Third Wave of Democratization (Huntington 1991), given that some scholars have pointed to the belligerent quality of democratizing states (Rosato 2003) with regard to waging both intra and interstate wars.

The unit of analysis is country-years, which captures both the frequency and the intensity of civil war occurrence. Gauging the intensity of civil wars helps to estimate to what extent civil wars have been recurring for the same state. Each spell indicates the number of years before a state experiences civil war. Each spell resets to one after every event failure, i.e. civil war onset. More than a few cases have missing values across the better part of the 63 years under study, too many of which were present, and therefore interpolating or extrapolating missing values was impossible. Other cases were also automatically dismissed mainly because they were microstates with populations under 500,000[29].

In total, there are 275 spells, 45 of which depict conventional civil wars, 63 and 17 represent irregular and symmetrical nonconventional civil wars (respectively) that were fought across the world from 1946 to 2008. The remaining 150 spells account for cases whereby civil wars were not fought throughout the totality of the time period: thus, the cases of Mexico and the United States have not undergone civil wars between 1946 and 2008. Those cases are therefore automatically coded as right-censored observations. What follows is a clear enunciation of the expected causal vectors that should either accelerate or delay the occurrence of civil wars. Below are the three hypotheses suggested in this part of the study.

4.2. Exposure to Civil War: Hypotheses

Hypothesis 1: *Incumbent consolidation, along with having the military take over the executive, should increase the hazards associated with conventional civil wars only.*

Hypothesis 2: *Higher GDP growth and per capita GDP should decrease the hazards associated with irregular civil wars only.*

Hypothesis 3: *Higher ethnic and religious fractionalization indices in autocracies should increase the hazards associated with symmetrical nonconventional civil wars only.*

[29] See Appendix A for more detail on excluded observations.

4.3. Exposure to Civil War: Sources of data and operationalization of variables

a. Dependent variables

Looking at the likelihood of a civil war erupting across states between 1946 and 2008, this part of the study utilizes the operationalization of civil war onset provided by the Correlates of War (COW) dataset[30]. According to the latter, "*an intra-state war must meet same definitional requirements of all wars in that the war must involve sustained combat, involving organized armed forces, resulting in a minimum of 1,000 battle-related combatant fatalities within a twelve month period*" (Sarkees *et al.* 2010, 2). Thus, the first time period, or year, during which 1000 battle-related deaths occur, constitutes an episode of civil war onset. While it has been argued by Sambanis (2004) that the COW dataset comes with limitations, namely when it comes to its yearly 1000 battle-related deaths threshold that the author deems too rigid, recommending instead a threshold of civil war onset according to a range of between 500 and 1000 yearly battle-related deaths (Sambanis 2004). However, one can argue that the COW threshold of 1000 yearly battle-related deaths offers an unambiguous discrete value upon whether or not a civil war takes place. Also, one can argue that there is a wide variation between the minimal and maximal value of the threshold suggested by Sambanis in that 500 to 1000, represents a 100% increase between the former and the latter, which could lead one to the question the extent to which the measure accurately captures the severity and duration of a civil war that is independent of its measurement. In other words, one could sensibly assume that the former civil war (500 deaths) might be less severe (in the level of violence) than a civil war with 1000 casualties, but that would be misleading

[30] Note that the COW dataset extends to the year 2007. Civil wars that occurred or started in 2008 were recorded using the PRIO dataset, whenever the coding of civil war matched the coding criteria of the COW dataset (of at least a thousand-yearly deaths). This was the case of Afghanistan (2008) that by conservatively estimates cost the lives of 4099 battle-related victims (Lacina 2009). This also was the case of Pakistan (2008) that also by conventional estimations, is believed to have caused the deaths of at least 2996 battle-related victims (Lacina 2009). While, the war in Sri Lanka (2008) cost the lives of at least 8396 battle-related victims (Lacina 2009). Finally, in Iraq (2008), 2090 battle-related victims succumbed during the civil war (Lacina 2009).

in the context of the time-period; whereby a civil war with 500 deaths that occur in a single month versus 1000 deaths that occur over the course of an entire year, can be arguably more severe in the level of violence. Thus, setting a threshold disregards the implications associated with the varying degrees of civil war severity and duration. Therefore, this study adheres to the parameters of civil war as coded in the COW dataset.

The COW dataset also disaggregates civil wars into four types: those fought over a) central control, b) local issues, c) inter-communal issues, and d) those that extend geographically to a wider region (beyond the state itself[31]). The latter category is not to be conflated with 'civil wars' that are fought between the *metropole* within a colony, such as the case of Venezuela in the 1820s (Attali 2010). This is mainly because the latter conflict was fought between Anti-Spanish independentists on one side and Pro-Spanish forces on the other side on Venezuelan soil when Venezuela was still not yet an independent state. Therefore, wars fought between pro-colonial powers and independentists prior to the formal existence of an independent state do not constitute episodes of civil war in this paper. However, wars that are fought over autonomy where the main objective for independentists is to secede from the existing independent state while the current government (or regime) seeks to preserve the status quo, as was the case with Sudan and South Sudan in 2010, are coded as civil wars in this study.

Given that the models used in this part of the study rely upon competing risks analysis[32], there are three additional dependent variables that must be mentioned. All three dependent variables represent the three types of civil wars that a state can face: conventional, irregular, or symmetrical nonconventional civil wars[33]. They are coded as 1, 2, and 3, respectively. The data is

[31] One can think of Yugoslavia (1991) or Ukraine (1918) as cases in point.
[32] Explained in more detail in the methods section.
[33] Defined amply in the theory section.

adapted from the work of Sambanis (2004) and that of Balcells *et al.* (2014). Both works code civil wars using the parameters designed by COW, whereby a 1000-yearly threshold of non-civilian deaths constitutes the onset of a civil war, regardless of its subsequent type.

b. Independent variables

The explanatory variables capture geospatial, political, demographic, and economic factors. The variables are divided between those that are endogenous and those exogenous to civil war onset. One can conceive of civil war onset being subject to effects that are either exogenous to civil wars themselves (indirectly affecting the odds of civil war), such as incumbent consolidation, militarization of the executive, GDP growth and per capita GDP, elevation, rural population, ethnic and religious fractionalization[34]; while civil war recidivism (or a state relapsing into civil war) along with being a new state (more than often likely to be more civil war-prone than older states) constitute variables that are endogenous to civil war onset itself. Distinguishing between variables that are either exogenous or endogenous to civil war onset should provide a more lucid understating of what makes states directly or indirectly exposed to civil wars.

Positing that the existence of substantial high elevation territory exposes states to civil wars (at least directly) is more than challenging (if not impossible) to demonstrate. This is because altitudes per state are time-invariant (or constant); and one cannot expect a constant to explain variation in the dependent variable (civil war onset). However, from a logical and theoretical position, elevation can explain a higher exposed risk to civil war onset because rebels tend to take refuge in mountainous terrains (Buhaug *et al.* 2002; Kalyvas 2001; 2006; Holliday 2013; Bueno

[34] While one might argue that social or demographic variables such as ethnic or religious fractionalization might be endogenous to civil war, we believe they can only be exogenous to civil war onset given that those same variables might explain social uprisings, inter-state wars, or other instances of political violence that are less severe than outright civil wars. Thus, it is more adequate to treat social or demographic variables such as ethnic and religious fractionalization as being exogenous to the civil war phenomenon itself.

de Mesquita 2013). The general idea behind the notion of elevation is that localities with mountains are more likely to attract rebel infrastructure since incumbents usually have control over urban territories and would struggle in logistic terms, to apply sufficient or effective pressure on rebel groups hiding in mountainous terrain (Buhaug *et al.* 2002). In his analysis of Venezuela during the Communist insurgency in the mid 1960's, Gall (1965:5) describes a belief shared by the peasants: "[they] would view themselves as facing two governments: the official one "down below" (*de abajo*) in the cities, and the counter-state formed by rebel forces "up above" (*de arriba)* in the hills" (Gall 1965:5) [as cited in Arjona *et al.* 2015:48]. Therefore, the grassroots of a *guerrilla*[35] can potentially develop into outright civil war. Nevertheless, it would be an epistemological fallacy to amalgamate the effects of high elevation (if any) with direct explanation of civil war onset. That is why in this study, elevation is considered as one unavoidable geospatial variable to introduce[36], one that should gauge *indirect* variation in the exposed risk of civil war onset. Elevation, or rough terrain, is measured by considering the percentage of mountainous terrain coverage per country. These data come from Fearon *et al.* (2003).

Also regarding geospatial variables, the rural population is gauged by taking the difference of the total population minus the urban population. The result is again logged in order to alleviate the wide disparities among observations and normalize (to an extent) the distribution of data points. The data on rural population is borrowed from the National Material Capabilities (Singer *et al.* 1987) compiled by the COW project[37]. Accounting for rural populations should have a dual purpose: first, the literature has thus far shown there are several instances of direct opposition between incumbents and rebels that have occurred in rural or peri-rural localities (Fearon *et al.*

[35] "Guerrilla" literarily means "small war" (Clausewitz 1989).
[36] Note that both elevation, or "Rough Terrain", and the covariate "Rural Population" are treated as control variables in the models.
[37] The data on rural population covers the period between 1946 and 2007.

2003; Kalyvas 2001, 2006; Holliday 2013; Bueno de Mesquita 2013). Thus, there seems to be a pattern whereby rural grievances are more visible or palpable than in urban localities[38]. Also, urban violence, such as the case of Mexico since 2006, albeit violent (Felbab-Brown 2013), is more indicative of a struggle between the state and criminal organizations, and not grievances between incumbents and consolidated insurgents, which is what distinguishes urban violence from civil wars. Second, introducing rural population as a potential explanatory variable in increasing the hazards associated with civil war onset has a conceptual mission in distinguishing between rural *versus* urban culture, whether it is a culture of politics, a culture of violence or a culture of society. In fact, as Scott (1977) posits in his work, "there is a systematic slippage between political ideas as understood in the city and as practiced in the village" [as cited in Kalyvas (2006)]. Thus, accounting for the propensity of rural prevalence in each case or state helps to avoid endorsing a type of urban bias.

When it comes to the social or demographic dimension—also exogenous to civil war onset itself—two main variables should capture the extent to which the structure or the texture of society can influence an increase (or decrease) in the hazards of civil war onset for symmetrical nonconventional warfare. The first is religious fractionalization, and the second is ethnic fractionalization. Both variables are adapted from Fearon *et al.* (2003); whereby the probability of randomly selecting two individuals having different religious and ethnic affiliation generates an ethnic and religious fractionalization distribution at the state level. This dual index of fractionalization has been omnipresent in the studies of civil war onset (Harff *et al.* 2003; Haynes

[38] Needless to say contemporary relevant cases such as the protracted Israeli and Palestinian conflict mainly manifests itself in urban localities (Balcells *et al.* 2014), however, it is argued here that there is likely to be a pattern of grievances expressed more prevalently in rural rather than urban localities.

2007; Cederman *et al.* 2013; Elaine *et al.* 2014). However, there are issues worth noting when the ethnic and religious fractionalization indices are used.

First, the religious and ethnic fractionalization indices are time-invariant, thus constant per subject throughout the survival time (63 years); therefore, the understanding that the measures are time-invariant should mitigate any explanatory impact these two variables have on delaying or precipitating civil war onset. Thus, given the stationary nature of these two variables, they cannot fully account for variation in the dependent variable. That is why in this Chapter, the coding of both ethnic and religious fractionalization is undertaken to generate variation by utilizing an interaction between a state's polity score[39].

The existence of religious and ethnic fractionalization does not necessarily suggest religious or ethnic tensions that would rise to the level of internal conflict. Highly fractionalized societies, whether religiously or ethnically, such as current-day Switzerland, Canada, or the United States mitigate the propensity for ethnic conflict given the existence of liberal democratic institutions, which allow for minority expression of grievances. Therefore, interaction terms are generated between ethnically and religiously fractionalized states and their respective autocratic propensity. A Polity IV score of +10 represents a consolidated autocracy (since we inverted the scale of Polity IV by multiplying individual scores by minus one, so that higher scores become suggestive of an increasingly autocratic type of rule. We introduce into the models Polity IV data,

[39] Note that we multiply the Polity IV scores by minus 1, so that higher scores become increasingly indicative of autocratic rule. This transformation makes viable both the theory and the methodology whereby ethnic and religious fractionalization are expected to have an impact only when the state in question is becoming increasingly autocratic (high positive values of Polity IV scores only in Chapter Four as Chapters Five and Six consider Polity IV data as it; in other words higher positive Polity scores would be indicative of increasingly democratic rule- in Chapters Five and Six).

Ethnic Fractionalization, and Religious Fractionalization indices as the three main effects[40] of the interactive terms Polity*Ethnic Fractionalization and Polity*Religious Fractionalization.

Religious and ethnic divisions have historically been prevalent in serving as a pretext for civil wars or political violence. One can think of the *Huguenots* (French Protestants or Reformists) epitomizing violent antagonistic religious cleavages in 16th century France before they were granted religious autonomy, but only after several violent conflicts. In the words of Keller (2008: 137): "Catholic polemicists often equated Huguenots with Muslims to imply that a new crusade was needed to purge France of her heretics from *within*" (emphasis added). Also, after narrating how the IRA (Irish Republican Army) established an alliance with pro-independentists movements in Southern Ireland (1922), Lewis (2014) mentions how political violence oftentimes reflected religious antagonism: "More disturbingly, on 17 June [1922], the division was responsible for a shocking reprisal attack outside Newry. Six Protestant civilians were killed and a number of homes burned in the attack" (Lewis 2014: 319). Thus, given their historical relevance, the inclusion of religious and ethnic variables to potentially explain the risk exposure to civil war onset seems warranted, but they must be contextualized within the scope of a state's polity to have explanatory utility.

Another political factor that is indirectly linked to civil war onset is whether or not the head of the executive is effectively a military figure. This variable, coded as a binary, so one whenever the aforementioned condition is met, zero otherwise, is adapted from Cheibub *et al.* (2010). The variable itself should help gauge the extent to which a given state is democratically 'deficient'[41].

[40] Those main effects must be accounted for in the models so that "the main effects and the interaction effects [do not] get confounded" (Williams 2015: 1).

[41] Note that the polity scores and the binary variable which codes whether the head of the executive is effectively part of the military are only 32% correlated, thus it can be said with high confidence that the models are not distorted by high collinearity among the two aforementioned variables.

It would also suggest that the given polity, if it is headed by the military, is likely to have failed to democratize (Karl 1990). This should be indicative of a higher exposed risk to civil war onset since the militarization of politics can increase political opposition and foster grievances among the constituent population.

The final political variable included in the models, assesses the extent to which politics or the political system in place can affect civil war onset given that the incumbent has consolidated its regime through unconstitutional means. This type of incumbent consolidation refers to the event whereby "*(1) the regime year qualifies as a democratic regime and (2) sometime during its current tenure in office the incumbents (person, party, military hierarchy) unconstitutionally closed the lower house of the national legislature and rewrote the rules in their favor,*" (Cheibub *et al.* 2010:5). This variable takes a value of one whenever the aforementioned condition is met, zero otherwise. Historically, the incumbent takeover of Alberto Fujimori, the Peruvian president that served a dual mandate between 1990 and 2000, constitutes an episode whereby the incumbent has consolidated under a democratic polity[42] before altering the set of institutional arrangements in his/her favor. Another case in point is the rule of the Philippines' ex-president Ferdinand Marcos, from 1965 to 1990 (Overholt 1986). This variable gauges how discrete events (more than often reflecting events of incumbent takeovers) affect the probability that a given state will undergo a civil war. The logic here is that democratic breakdown[43], as a result of incumbent takeover or constitutional manipulation by the incumbent is likely to increase the risk exposure to civil war.

Turning now to economic variables that can potentially explain the varying degrees in risk of civil war occurrence, GDP (growth domestic product) growth per annum and per capita GDP

[42] Peru underwent durable military regimes prior to 1980. The year 1980 marked an uninterrupted 12 year-democratic spell before being interrupted by Fujimori's autogolpe in 1992.

[43] Note that polity scores and incumbent consolidation correlate at 6%. Thus, it can be said with confidence that the models are not distorted by collinearity among the aforementioned variables.

per annum are purported to decrease the hazards of irregular civil war onset with every standard deviation increase in each of the aforementioned variables. GDP growth gauges the wealth of nations (Smith 1977). The logic here is that higher levels of GDP per annum translate into two correlated posterior changes that are both inhospitable to civil war onset: first, higher GDP growth makes any attempt at contesting the regime via civil wars counterintuitive, as higher GDP growth is more than often synonymous with rising employment thus mitigating economic grievances[44].

Per capita GDP has been associated with state capacity. In other words, per capita GDP and state capacity share a direct or positive relationship. Two things are worth explaining: first, high per capita GDP implies or presupposes the notion that the state functions well in providing basic public goods, and has cultivated both public and private investment opportunities that benefit the majority of the populace. Note that per capita GDP takes into account the wealth distributed to individuals[45]; this wealth reflects what emanates from the real economy, however. Thus, cases such as Colombia or Peru, while having a relatively low per capita GDP[46], can, nonetheless, fail to capture the real extent of the wealth at the individual level since a prevalent source of income emanates from the informal economy (Felbab-Brown 2005). The second observation is that per capita GDP represents a plausible proxy for state capacity (Lichbach 1995; Wood 2003; Fearon *et al.* 2003)[47], which can deter civil wars form ever manifesting because of the state's ability to suppress or alleviate popular grievances by opting for either extreme repression or encompassing

[44] This is assuming that economic redistribution to the household level is equitable and not distorted by patronage systems. This is also not considering the extent to which the informal economy is prevalent in a given economy.
[45] Although one can argue that per capita GNI (Gross National Income) may be more adequate to measure wealth than per capita GDP. However, given the dearth of data on GNI (whether looking at the World Bank or the International Monetary Fund Statistics), per capita GDP serves as a proxy for wealth throughout this paper.
[46] Relative to the Argentinian or Brazilian economies with approximately $15000 and 11000$ per capita in the former and the latter, respectively while Colombia and Peru were at $7800 and $6700 per capita as of 2013 (World Bank 2013).
[47] Others such as Norris (2012) discuss how increasing state capacity can increase the likelihood of peace, or the absence of conflict, but the latter focuses on a parameter of post-civil war termination, thus not looking at the exposure to conflict *ex ante.*

peaceful reforms in the case of autocracies and democracies, respectively. Crucially, it is argued here that higher per capita GDP exacerbates collective action problems among civil war brokers. In fact, in order for a civil war to be waged 'properly' and sustainably, both incumbents and rebels (especially the latter) have to enjoy some type of legitimacy in the eyes of the population they control or rule (Arjona *et al.* 2015). In the case of rising GDP growth rates, generating new alliances, whether of a political or military nature, becomes increasingly challenging, since individuals are likely to think twice before contesting a state from which they are directly benefiting.

In terms of operationalization, the data on both GDP growth rates and per capita GDP come from the Maddison project (Bolt *et al.*2014). GDP growth rates are measured by the yearly percentage change (interval level data with equal intervals of one percent) in order to control for wide disparities in dollarized nominal GDP across states, as some states are much richer than others. Per capita GDP has a nominal base in Geary-Khamis dollars[48] and is operationalized by generating the natural log of the dollarized amounts so that standard errors decrease substantially by normalizing the distribution of data points of per capita GDP while keeping the intensities or degrees of wealth (on a logged scale) undistorted. Both variables, GDP growth rates and per capita GDP, along with polity scores, incumbent consolidation, the type of executive, are all lagged by one year in order to alleviate endogeneity in the vectors of causality. In fact it is argued that a prior change in the aforementioned variables should increase or decrease the hazards of civil war onset, and not the other way around; thus the rationale for lagging the variables.

Before explaining the methods used in this part of the study, it is crucial to discuss the two variables that are conceived of as having a direct effect on civil wars: that of being a new state and

[48] Geary-Khamis is a hypothetical currency that helps to alleviate wide disparities in amounts of dollars by normalizing (to an extent) differences in purchasing power across states (Bolt *et al.* 2014).

civil war recidivism. Given that the median, or the most representative year, for states that achieve sovereignty between 1816 and 2008 is 1964, a new state is measured as one that is independent (thus for which a Polity IV score exits) post-1964. The only theoretical import that could categorically impose a threshold upon which deciding whether a state is new becomes feasible relates to the characterization of Pre or Post-Westphalian, which saw-the Westphalian Treaty- the emergence of sovereign *states* along with the concomitant development of the concept of diplomacy (in the 17th Century). Since in that regard, all the states under study are new or are at least new in that they are Post-Westphalian, considering the median value as the threshold upon which the appellation 'new' is granted is purported to represent the most representative value, thus least biased, to determine whether or not a given state is new.

Utilizing the Polity IV data, which features a time-series of 1816-2008, years of no independence or years of colonization are omitted from the sample[49]. Concretely, Bangladesh, having seceded from Pakistan before gaining independence in 1971 is considered a new state[50]. Crucially, new states are conceived of polities with newborn institutions, thus transitional and unstable ones, whereby the hazards associated with civil war onset are higher than in mature states (such as the United States or Australia). Thus, methodologically, it is vital to alleviate dependency in the data as a result of conflating together the hazards of civil wars in mature and bourgeoning states.

Several works have accounted for whether a state, relative to another, has relapsed into civil war (Gurr 2000; Fearon *et al.* 2003; Cederman *et al*. 2012; Hartzell *et al.* 2015). Therefore, states that

[49] This is simply because those cases are missing from the Polity IV data, even though they would constitute instances of civil war in this paper.

[50] The wars of independence fought between European colonizers and North African independentists do not give way to new states (in this paper) since Tunisia gained its independence in the 1950's while 1962 marked Algerian independence from the French. Thus, in both cases, the state is not considered new.

have relapsed into civil wars or those for which there is a recurrence of civil war are likely to be more at risk of civil war than states, which have not experienced civil war since the year 1900[51]. Similar to that of the 'new state variable', civil war recidivism helps to nuance (methodologically) the impact of explanatory variables on the hazards of civil war onset by alleviating event dependence: survival models, by default, assign a random (or 50/50) distribution of unobserved heterogeneity that impacts hazards in one way or another (Box-Steffensmeir *et al.* 2007). The idea here is that the cases of Uganda and that of the United States are qualitatively different from one another considering that with the former we observe a frequent occurrence of civil war, compared to the latter where we have not observed a civil war since 1865. Therefore, we expect that Uganda faces a higher hazard of civil war onset than the U.S. Thus, controlling for civil war recidivism is explained by the fact that the case of Uganda may have higher hazards of civil war onset than the United States to begin with; consequently, the introduction of civil war recidivism in order to alleviate event dependence is warranted, both on theoretical and methodological grounds.

Finally, eight control variables are introduced, five of which are time-invariant and are purported to capture any regional effect (four of them out of five) of civil war onset or more precisely the type of civil war to which some regions, relative to others, may be more exposed and also capture how elevation, or rough terrain, (the fifth and final time-invariant control variable) can generate (to an extent) varying degrees of exposure to civil war in general and to different types of civil war. The regions controlled for are Sub-Saharan Africa, East Asia, MENA (Middle-East and North Africa), and Latin America[52]. The aim of controlling for region-specific effects is twofold: first, as the work of Fearon *et al.* (2003) shows, most civil wars are fought in Sub-Saharan

[51] The year 1900 is the threshold upon which civil war recidivism is coded as 1, 0 otherwise (if it has not experienced civil war between the year 1900 and its recorded year of entry or 1946).
[52] The Latin American region includes The Dominican Republic and seventeen other Republics of Central and South America.

Africa, thus it is important to control for the region of Sub-Saharan Africa in order not to overestimate hazards associated with all types of civil war. The second purpose of controlling for region specific variation is to determine whether a specific region is more susceptible to experiencing a specific type of civil war. Also, controlling for the MENA region helps to investigate whether there is something unique to the types of civil wars fought in this region as well as the propensity given that Algeria (in the 1960s and in the early 1990s), Lebanon (1975-1990), Jordan (1970), Libya (in 2011-), Syria (2011-), Bahrain (2011-) all experienced severe political violence or outright civil war.

4.4. Exposure to Civil War: Methods

In this chapter we estimate a series of nonparametric models based upon survival analysis, whereby each subject either experiences event failure (or civil war onset) during the 63 years of observations or not (in which case it becomes automatically coded as right-censored-such was the case of France or Austria). Using Cox Proportional Hazards estimates, this study utilizes competing risk analyses on civil war onset. Essentially, each equation is estimated four times: using standard Cox survival regressions, the first model conflates all types of civil wars together in order to examine the covariate effects on hazards of civil war onset. The second model isolates episodes of irregular and symmetrical nonconventional civil wars by treating them as censored and competing events to the failure of the expected event, which is conventional warfare (the failure of the expected event in the second model), thus examining the covariate effects on hazards of conventional civil war onset[53] while the hazards of irregular and symmetrical nonconventional civil war, or more precisely their subhazards are, by design, allowed to have an impact upon the hazards of the main failing event. Likewise, whenever the failing event of interest is irregular

[53] Essentially, whenever a type of civil war becomes of interest (as the dependent variable), the two remaining types of warfare compete against the type of warfare of interest.

warfare, competing events become instances of conventional and symmetrical nonconventional warfare. Finally, focusing on symmetrical nonconventional warfare (Model Four) allows for the subhazards of conventional and irregular warfare to compete against the main event of failure (symmetrical nonconventional warfare).

This method, by utilizing the same exact covariates in all four equations, should theoretically generate the least biased covariate estimates possible. Also, competing risks regressions provide two related yet distinct advantages: first, they are more flexible and thus more versatile than ordinal logistic modeling given that the latter juxtaposes categories of outcome (consequently allowing for comparison between categories) while the former (competing risks modeling) also allows for the competing categories (in this case types of civil war) to have a concomitant or even prior impact on the main event of failure. Consequently, competing risks analyses offer a third advantage that derives from the two merits just mentioned. Coherent with the coding of civil wars in Chapter Five (as we will see), competing risks analyses allow or at least presuppose that a change in the type of civil war can potentially occur or that a conventional civil war can materialize when expecting the failure of an event of irregular warfare. This flexibility that competing risks analyses promise illustrates a more realist and a more empirically reliable model than say ordinal logistic models, which do not allow for interactions between categories (by design). In fact, Chapter Five goes into more detail regarding how a given civil war can change from irregular to conventional warfare over the course of the conflict; namely when foreign aerial support assists a militarily outmatched (relative to the incumbent) insurgency on the ground, thereby restoring the power dynamics between the warring actors. That is to say that competing risks analyses portray an empirically

reliable statistical model of the reality of civil war[54]. An algebraic representation of the hazard function is below:

$$h(t) = h_0(t)exp[\sum_{j=1}^{p} \hat{\beta}(X_i^* - X_i)]$$

Where the hazard function at t disregards the effects of covariates (covariates are set to 0) in order to generate the base hazard function (or what would equal to the intercept in a linear regression). At t_1, hazards become a function of covariate effects in changing (positively or negatively) the probabilities of survival (or not experiencing civil war) per subject. The parameters of the underlying hazards are allowed to vary across the four models generated: aggregated civil war types, conventional, irregular, and symmetrical nonconventional warfare. The results are then logged to generate the logged likelihood of survival[55]. As mentioned in Section 3.3, event dependence was accounted for by recording whether subjects have relapsed into civil war. Another dependency in the data relates to heterogeneity, or unobserved heterogeneity; this is especially frequent when working with data across countries, such as in the case of this section. The history of different countries has arguably followed different development pathways, some more resistant to civil wars than others. In fact, different cultures emanating from different colonial legacies (i.e. Portuguese colonial heritage, such as in Brazil versus Spanish dominium, such as in Argentina), makes any attempt at comparing cross-nationally and throughout history difficult. Many elements, in fact, deeply rooted in each individual subject's history, may bias the results. That is why robust standard errors clustered by country were introduced; this specification should help account for unobservable heterogeneity not captured by the covariates. Overall, preliminary post estimation

[54] While standard Cox regressions offer two options, failure or nonfailure of the main event, competing risks analyses provide at least two additional alternatives, which are the failure or nonfailure of at lease one competing event.
[55] The graphical visualization of both cumulative survival and hazard functions are found in the Appendix A.

techniques show that the models are well specified, did not exclude observations, and are not distorted by missing data[56]. Of important note is that one main assumption of the Cox Proportional Hazards model is that "the hazards of the different strata formed by the levels of the covariates are proportional" (Abeysekera *et al.* 2009). Meaning that if a specific covariate effect triples the risk of civil war at a given time *t*, the same magnitude of covariate effect on the hazard (or a 200% relative increase in covariate effect on hazard), must remain unchanged throughout the whole sample between *t* and t_n for that subject. In testing for proportionality of covariate effects, a few variables violated that assumption[57]. Corrections were provided by multiplying those covariates by the natural log of units of time[58]. Other works have utilized this technique; in fact, this technique is borrowed from other works (Box-Steffensmeir, 2001; Maeda, 2010; Hiroi *et al.,* 2013). With the introduction of the aforementioned specification to adhere to the assumption of proportionality in hazard and subhazard estimates, four models were generated[59]. Also, it is important to mention that the provided corrections do not hinder the parsimony of the models, simply because they are not intended to explain variation in the dependent variable, but instead to specifically correct for the violation of the aforementioned assumption.

4.5 Exposure to Civil War: Results

[56] See Appendix A for more detail on how missing data were dealt with.

[57] The command *estat phtest* (for Cox Regressions-or Model 1) along with the option command *tvc* (or time-varying covariates for proportional subhazards assumption) (for models two, three, and four) were used in STATA: highly significant *p* values of covariates indicate that the assumption of proportionality has been violated. This method helps to detect those covariates that had disproportional effects on hazard in order to provide needed corrections. The tables of proportionality of hazards can be found in Appendix A.

[58] Note that in the model where it is question of irregular civil wars (Model Three), no corrections were introduced as they were not needed; none of the covariates violate the assumption of proportional subhazards when it is question of irregular warfare (see Appendix A).

[59] The *stcox* command in STATA is accompanied by the robust cluster by country specification and the EFRON method (Efron 1977) in order to alleviate the estimation bias associated with time dependency error (Gerds *et al.* 2007) and to help in handling tied events as some subjects share the same survival time (Borucka 2014). This specification is only introduced when all types of civil wars are conflated together (Model 1), since it is question of standard Cox Regressions in Model One while Models Two, Three, and Four do not allow for the aforementioned specifications (Efron) to be introduced.

Table 4.6 outlines the results of this section. In table 4.6, Model One assesses the risk exposure to all types of civil wars conflated together. Models Two, Three, and Four examine the risk exposure to conventional, irregular, and symmetrical nonconventional civil wars, respectively.

The results in Table 4.6[60] suggest that having the military as head of the executive makes states significantly more exposed to all types of civil war. Crucially, one observation has to be made. It is logical to posit the following: since the military as an executive significantly increases hazards in all types of civil war (Model One), and since conventional, irregular, and symmetrical nonconventional warfare are all subsets of civil wars, the military as an executive must have a significant effect on all three types of civil wars (Models Two, Three, and Four). Nonetheless, albeit perfectly logical, the aforementioned syllogism, if held to be true, would dismiss the complexity of the theoretical distinction made between conventional, irregular, and symmetrical nonconventional civil wars. Instead, the logic that is adhered to here conceives civil wars as having a clear difference in how they are fought, which can explain why the same variable can predict a conventional civil war, while failing to explain the exposure to an irregular or symmetrical nonconventional civil war. The remaining political variable, incumbent consolidation, also fails to achieve statistical significance in explaining any variation in the risk exposure to conventional civil wars; thus, Hypotheses One should be rejected.

Looking at conventional civil wars, one can see that religious fractionalization indices expose states with autocratic propensity[61] to civil wars of a conventional nature. In fact, states that fit the aforementioned criterion are 1.4 times[62] more exposed to conventional civil wars than those

[60] The data on all three Chapters can be found in Appendix D, which presents the table of summary statistics by order of enumeration of the Chapters.

[61] By autocratic propensity, it is meant that as polity scores increase, the state in question becomes increasingly autocratic.

[62] The option *nohr* in STATA was used in order to generate (and thereby interpret) the coefficients of the regressions run, as opposed to the hazards odds ratios, which is the default option. This procedure refines the analysis of the results as it generates a straightforward interpretation of not only the statistical by also the substantive significance (on

that do not fit this criterion. Moreover, ethnic fractionalization, when interacted with a more pronounced autocratic propensity, makes states less exposed to conventional civil wars. Concretely, those states are 1.3 times less likely to experience conventional warfare, relative to states that do not fit this criterion. Also, relative to other regions, Latin America has typically undergone civil wars of conventional nature, relative to other regions. The concrete implication to be made here is that Latin American civil wars (at least the ones that occurred between 1946 and 2008) have commonly been motivated by political grievances.

Table 4.6. Competing Risks Analyses (Exposure to Civil War)

	Model 1	Model 2	Model 3	Model 4
Main Independent Variables				
Incumbent Consolidation[a]	0.16	0.05	1.034	-0.021
Military as Executive[a]	0.573*	0.196	0.630*	0.129
Per Capita GDP[a.b]	-0.197	0.302	-0.750*	-0.605
Yearly GDP Growth[a.b]	0.091	-0.205	-0.291	0.110
Polity	0.005	0.049	0.085	-0.121
Ethnic Frac.	0.61	-1.18	0.861	1.762
Religious Frac.	-1.732	0.582	-0.422	2.003
Polity* Ethnic Frac.	-0.337**	-0.269*	-0.061	0.318**
Polity* Religious Frac.	0.451*	0.335*	-0.158	-0.037
Control Variables				
Rough Terrain	0.323	0.280*	0.177	0.764
Rural Population	0.371	0.281	0.521*	-0.747
New State (Post-1964)	-4.468***	-1.652**	-0.755	-25.052***
Civil War Recidivist (since 1900)	0.378	0.974	-0.063	-16.840***
Sub-Saharan Africa	0.702	0.247	-0.121	0.496
MENA	0.789	-0.627	1.333	1.579
Latin America	4.990**	3.856**	1.49	0.588
Asia	0.771	0.379	0.738	-18.099***
Interactive Terms				
LN(Time)* Per Capita GDP[c]		-0.034*		
LN(Time)* Ethnic Frac. [c]		0.940*		
LN(Time)* (Polity*Ethnic Frac.)[c]	0.024*			
LN(Time)* Rural Population [c]		-0.106*		
Log Likelihood	-934.45	-291.38	-216.09	-91.47
Number of Subjects	154	154	154	154
Number of Observations	7483	7483	7483	7483
Number of Competing Events	0	80	62	108

hazards) of the covariate estimates 1.4 is the magnitude computed after considering the exponential function to the power .335 (~ 1.4).

a. Lagged one year. b. Logged. c. LN(Time) interactive terms correct for non-proportionality in hazards. In order to fit the table on one page, robust standard errors are not shown. P-values: * p<0.05, ** p<0.01, *** p<0.001. Notes: SNC: Symmetrical Nonconventional. MENA: Middle East and North Africa. Only significant interactive terms are shown in the above output. A full account of all interactive terms with the logged units of time can be found in the appendix.

Looking at Model Three, which assesses the risk exposure to irregular civil wars while conventional and symmetrical nonconventional civil wars are the two competing events, one can see that a militarized executive significantly increases the hazards of irregular warfare. In fact, whenever the military as an institution and the executive as a power become confounded, states become 1.9 times more exposed to irregular warfare. Conversely, increasing per capita GDP significantly decreases the prospects for irregular civil wars. Concretely, a standard deviation increase in per capita GDP makes states 2.1 times more resistant to irregular warfare. Given that GDP growth fails to reach any conventional threshold of statistical significance in predicting a decrease in the hazards associated with irregular civil wars, Hypothesis Two can only be partially accepted. Moreover, as opposed to other types of civil war, irregular civil wars appear to be sensitive to changes in rural populations across states. In fact, increasing rural population makes states, on average, more vulnerable to irregular civil war. The concrete implication for future studies on civil war is that civil wars fought irregularly are typically guided by grievances that oppose the urban neighborhoods to their rural surroundings and that accounting for a rural dimension (whether in terms of population or agriculture- among other things) appears to be a pertinent endeavor.

Finally, Model Four, which assesses the risk exposure to symmetrical nonconventional civil wars while conventional and irregular civil wars are the two competing events, suggests that higher autocratic scores in states with higher ethnic fractionalization are significantly vulnerable to symmetrical nonconventional warfare. Concretely, the aforementioned quality of states makes

them 1.4 times more likely to experience symmetrical nonconventional warfare than those that do not fit this criterion.

4.7 Conclusion:

From the aforementioned results one can derive several conclusions. First, we mention the main observation as it represents a strong implication for future work on civil war. If the results prove one thing, it is that the argument against aggregating all types of civil war into one measure is pertinent as failing to disaggregate civil wars into different types obscures the complexities that define the unique features and empirics of each type of civil war fought, whether it is of a conventional, irregular, or symmetrical nonconventional nature. Second, poor states seem to be most exposed to irregular civil wars. Also, having a militarized executive also means that an irregular civil war is looming. Consequently, in order for incumbent states to be less exposed to civil wars, the executive as a power should be independent from the military as an institution. Also, given that increasingly autocratic states with more prevalent religious fractionalization are well exposed to the risk of conventional civil wars, those same states need to either democratize, desacralize politics, or both[63]. Finally, given that increasingly autocratic states with higher ethnic fractionalization are vulnerable to symmetrical nonconventional states, those same states need to either democratize, promote nationalist principles in lieu of cultivating ethnic loyalties, or both[64]. This last finding also implies that political and institutional arrangements should be conceived of as solutions to demographic 'problems' (higher ethnic fractionalization indices). This finding matches the implication of the qualitative work of Horowitz (1993). In fact, Horowitz (1993) suggests that the only way to resolve ethnic conflict within deeply divided societies is for states to

[63] Evidently, both propositions are not mutually exclusive.
[64] Idem.

democratize and to form inter-ethnic coalitions in order to reduce ethnic exclusion while rewarding ethnic inclusion. In fact, as consolidated democracies have either developed assimilationist policies that had the effect of dissipating ethnicities from politics (such as in the United States or France) or embraced a culture of multiculturalism where in which, albeit different ethnicities are explicitly visible, the respective ethnic interactions have remained peaceful such as in the United Kingdom or in Australia (Horowitz1993).

Chapter 5:
The Level of Violence in Civil War

This chapter works to establish a clear pattern to the variation in the level of violence perpetrated against civilians during civil wars.

5.1. Level of Violence: Research Design

This first analysis in this Chapter assesses the overall (macro-level) variation in the level of violence by looking at a world sample of civil wars between 1946 and 2008 and by using data on civil war from the PRIO100 dataset (Lacina 2005). Unlike the COW dataset, used in the previous Chapter, Chapter Four, which evaluates the extent to which states can be exposed to civil war, PRIO100, records at least a hundred-yearly deaths as the decisive threshold upon which the distinction between instances of political violence and outright civil war is made. There is a dual purpose to using this dataset: first, it provides overall macro-level variation in the level of violence per observation and through the course of the civil war. Second, the PRIO100 dataset, as opposed to the COW dataset, helps to account for the overall level of violence by aggregating civilian and combatant fatalities in civil war (Lacina 2005)[65]. After the exclusion of missing data (that were deemed too high to interpolate), there were a total of 905 observations in the cross-sectional design ranging from 1946 to 2008. The unit of analysis is battle-related deaths per year.

The second analysis in this Chapter conducts a micro-level analysis of the level of violence. It also excludes instances of violence perpetrated on the battlefield in order to focus exclusively on civilian victims. This new dataset, the Konstanz One-Sided Event Dataset (or KOSVED), is designed in a collaborative effort (Bussman and Schneider 2012). The dataset covers 19 (of which 3 were excluded due to lack of data) instances of civil war from 1979 to 2008. The data is clustered

[65] Note that the Correlates of War dataset excludes all civilian deaths in order to exclusively focus on battle-related combatant deaths (Sarkees *et al.* 2010).

by days or weeks, depending on the civil war in question. Most of the civil wars cover the Sub-Saharan region, while also covering the war in Chechnya (1993-2006), Macedonia (1998-2001), Azerbaijan (1990-1996), Bosnia-Herzegovina (1990-1996), Croatia (1990-1996), Slovenia (1991), and Serbia (1998-2001)[66].

The results of this analysis, which are intended to capture the micro-dynamics of civil war violence should be consistent with those based upon the data (on a macro-level) compiled by the PRIO100 dataset. As a result, the consistency in the results between macro and micro-level analyses should provide an element of robustness to the theory; that is, symmetrical nonconventional, conventional, and irregular civil wars, by this order of enumeration, showcase a gradual rise in the level of overall direct violence committed *against civilians* while irregular, symmetrical nonconventional, and conventional warfare produce a crescendo in the level of violence *on the battlefield*. Evidently, a dataset that only covers 19 (of which 3 are excluded) civil wars cannot possibly be representative. However, here are just a few reasons why this dataset was considered, in its own right, as an integral part of this study on civil war violence. As mentioned in the review of the literature section, the dynamics of violence peculiar to civil war always manifests at the micro-level and in a dyadic fashion. Thus, merely focusing on the macro-level, albeit valuable, may generate a reductionist study of civil war. Variations *do* exist at the micro or subnational level. It is even argued here that micro-level variations illustrate more reliably the dynamics of violence than macroscopic studies since the former generates a refined template of violence by considering local-level increases or decreases in the level of violence of which macro-level studies are by design dismissive.

[66] See Appendix B for details on all the civil wars included.

Finally, and most importantly, recent studies on civil wars, albeit concise in differentiating between asymmetries in military power between the incumbent state and insurgency (Balcells *et al.* 2014), classify the entirety of a given civil war under the rubric of conventional, irregular, or symmetrical nonconventional. One novelty of this part of the study lies in the differentiation between regions (or districts) whereby a given insurgency may be more consolidated than in others, at the local level. This contribution to the literature is based on the premise that in every civil war, there exists a clear rebel stronghold, which is unique to a certain region and typically implies weakness of the same rebel group in other locations, typically controlled by the incumbent state. Consider the current-day Syrian civil war. It is more than challenging to characterize the Syrian civil war, as a whole, as being fought conventionally, irregularly and so forth. In fact, the Northern part of Syria ascribes to a clear undisputed control of one insurgent group (among many), the Islamic State, over the civilian population of *Raqqa* (Weiss *et al.* 2015). In contrast, the southern part of Syria, especially Damascus, its capital, is predominantly controlled by the current incumbent state. Other factions, affiliated with Kurdish forces are also uncontestably controlling the civilian population in the Northeast region of Qamishli. Consequently, and as a result of different types of the weaponry in the aforementioned regions of Syria, the war is fought differently depending on *where* the combat is taking place. This observation can be extended to different civil wars. The case of Venezuela in the 1960's shows how the insurgents, while enjoying a foothold in the interior *llanos* or plains, also took control of the Andean region of Venezuela (Crowley 1987) [as cited in (Arjona *et al.* 2015:51). Thus, while coding a civil war as fitting one of three categories is parsimonious and therefore generalizable, it may be empirically inaccurate to code the entirety of a civil war, especially when the latter is lengthy, as pertaining to *one* type of civil war. While this bias in coding is ineluctable on a macro-level, micro-level data helps to alleviate this bias by

matching the coding of several instances of violence perpetrated against civilians in the same civil war with different and evolving spatial-temporal modes of violence within that same civil war. Below are four hypotheses that this Chapter attempts to confirm or reject.

5.2. Level of Violence: Hypotheses

Hypothesis 5: *Irregular civil wars should generate the highest level of violence perpetrated against civilians (outside of the battlefield), conventional civil wars should provoke a decrease in civilian deaths and symmetrical nonconventional warfare should cause the fewest civilian deaths.*

Hypothesis 6: *Irregular, symmetrical nonconventional, and conventional civil wars should produce a crescendo in the level of violence on the battlefield, respectively.*

Hypothesis 7: *Higher democratic scores should reduce the level of overall violence both on and off the battlefield and regardless of the type of war being fought.*

Hypothesis 8: *Increasing wealth, along with economic growth, should decrease the size of the insurgency, which is likely to decrease the level of violence both on and off the battlefields and regardless of the type of war being fought.*

Hypothesis 9: *Higher ethnic and religious fractionalization indices should increase the level of overall violence both on and off the battlefield and regardless of the type of war being fought.*

5.3. Level of Violence: Sources of data and operationalization of variables

a. Dependent variables

There are a total of two dependent variables in this analysis. The first aggregates civilians and combatants and gauges the severity of the violence in its totality during a civil war (battle-related deaths). The second dependent variable, while exclusively measuring civilian deaths, gauges the severity in the level of violence in areas with dense civilian inhabitance, thus, not on the battlefield. Of course, this is assuming that the geography of the battlefield is clearly distinct from that of residential areas. In other words, it is assumed that the location of the battlefield and that of residential areas do not spatially overlap. While Guevara (1967), Mao (1978), Wood

(2003) argue that the region of the battlefield and that of residential areas overlap when irregular civil wars are fought, the significant difference in deaths on the battlefield and those outside of it[67] provide at least some support to the premise that the location of the battlefield and that of residential areas do not spatially overlap, regardless of the type of civil war. The data on battle-related deaths (in the first dependent variable) is borrowed from the works of Lacina (2005) and Lacina (2009); the latter provides and extension to the data originally compiled in the work of the former. Lacina (2009) disaggregates annual fatalities into three different types: low, high, and best estimations[68] (Lacina 2009, *codebook*).

The data for the second dependent variable is adapted from the KOSVED dataset (2012). It reports the daily or weekly deaths of civilians at the hands of either the incumbent state or the insurgent (never both concomitantly). The data on civilian deaths is disaggregated according to the type of weaponry used (by either the incumbent state or the insurgent) that caused each civilian fatality. The dataset covers a broader parameter of violence by including harm done to civilians along with differentiation between the sex, the age, and the nationality of the targets (Schneider *et al.* 2012). For the purposes of this research, the key variables that were considered in this study are those that have information on how many civilians were killed as a function of the type of weaponry used. There are seven types of weaponry that can cause death: the number of civilians killed by primitive weapons such as "spears, axes, machetes, and clubs" (Schneider *et al.* 2012), by shootings, by bombings (grenades), by suicide attacks, by tank attacks, by aircraft attacks (aerial bombings), and by weapons of mass destruction (whether of chemical, biological, or

[67] The total number of battle-related deaths is 6,607,467 while that of civilian deaths outside of the battleground reaches 18,503; the equivalent of 106,572 deaths per year (over 62 years) regarding the former and 804 deaths per year (over 23 years) in the case of the latter.

[68] The regressions run only considered the best estimates, in order to avoid both an overestimation (high estimation of deaths) and an underestimation (low estimation of deaths) of annual casualties.

radiological nature) (Schneider *et al.* 2012). The dependent variable was generated after summing the data for all the aforementioned modes of killings[69]. Note that the number of civilians who have directly succumbed to civil war violence without known modes of killing were not accounted for in the study. In fact, not knowing the type of weapons used to kill a civilian makes it impossible to code an instance of civil war as fitting one of the three categories: conventional, irregular, or symmetrical nonconventional warfare.

b. Independent variables

The main independent variable for both analyses in this Chapter are the same: the type of civil war being fought; coded as one for conventional warfare, two and three for cases of irregular and symmetrical nonconventional civil wars, respectively. With the first dataset, the data on the type of civil war being fought comes from the work of Balcells *et al.* (2014) whereby again, militaristic sophistication and capability of the incumbent state and the insurgent creates an index of power parity (or mismatch), which consequently determines whether the war is fought conventionally and so forth.

The same variable, the type of civil war being fought, is coded using a novel and empirically more refined technique of differentiating between different types of civil wars being fought within the same state and during the same time periods. This coding procedure is considered more representative of each individual case of civil war, at the district level. The coding of every individual instance of violence perpetrated against civilians is a function of, not only the weaponry deployed (as it has been the case thus far within a nascent literature on civil war violence), but also

[69] Note that primitive weaponry can be much deadlier than other modes of killing, such as bombing. The average minimal number of civilian deaths as a result of the use of primitive weaponry is 25 while the minimal number of civilian deaths as a result of the use of grenades is 13. Also, the maximal toll generated by the use of tanks reaches 60, while the minimal estimation of primitive weaponry reaches 470 deaths, also representing its maximal value. Thus, using heavy artillery such as tanks is not highly associated with or endogenous to subsequent high levels of violence.

of the tactics available to the incumbent state and the insurgent that are used concurrently with weapons.

There are twelve tactics available to both the incumbent state and the insurgent over the course of a civil war. The data, along with the explanation of what each tactic entails, are compiled in Schneider *et al.* (2012) and are listed in Appendix B. For the sake of this study, only the following twelve tactics are possible and available to *both* the incumbent state and the insurgent over the course of a given civil war: looting, scorched earth tactics, starvation, human shields, target assassination, torture, hostage taking, kidnapping, deportation, disappearances, camps, and sieges. Two assumptions deserve elaboration: first, it is assumed that for instances where weapons of mass destruction, airstrikes, and tanks are used, it is always to the favor of the incumbent, as it is assumed that the insurgent does not enjoy either the resources or the knowhow to maneuver such weaponry. However, in instances where the insurgents are able rely upon friendly foreign actors that use heavy weaponry against the current incumbent, this external involvement restores the balance of power between the insurgent and the incumbent, changing the coding of the civil war from irregular to conventional warfare[70].

Consequently, for every instance where the aforementioned three weapons (weapons of mass destruction, airstrikes, and tanks) are used, conventional and symmetrical nonconventional warfare are naturally excluded. This is because using extremely high-tech weaponry distorts the power parity between the incumbent state and the insurgent to the favor of the incumbent state,

[70] Such was the case of the Bosnian insurgency that relied on air support from the North Atlantic Treaty Organization (or NATO) against the Serbs in September 1995 (Schneider *et al.* 2012). Also, one can think of the military support and Armenian military budget transfer as a way of supporting the insurgency in the region of Nagorno-Karabakh in 1991 Azerbaijan (Schneider *et al.* 2012, Balcells *et al.* 2014). This logic equally applies to whenever the current incumbent state enjoys external military support to fight off the insurgency; which consequently changes the coding of the civil war from conventional to irregular (Rwandan Patriotic Front supported the *Forces Armées Congolaises* or the Congolese Armed Forces through airstrikes on the regions of Losenda and Bunia in Zaire-or nowadays known as the Democratic Republic of Congo- on the 10th of July 2000 and the 29th of January 2001, respectively (Schneider *et al.* 2012).

thus the war is not fought conventionally. Also, since there are extremely high-tech weapons being used, the war is not fought in symmetrical nonconventional mode[71]. The second assumption is that power relations between the incumbent and the insurgent are always a function of the incumbent's initial state power: this assumption derives from the notion that the prevalence of rebels and the success at consolidating their insurgency are due to a great extent to the incumbent state weakening or the outright absence within areas over which rebels claim control (Crowley 1987:50) [as cited in Arjona *et al*. (2015)].

The following scenarios illustrate how an instance of civil war was coded[72]. Consider an example of an incumbent or an insurgent engaging the civilian population in live ammunition. This information by itself does not help in clearly identifying the subsequent type of civil war. In fact, direct shooting can constitute instances of all three types of civil war. However, whenever the incumbent or the insurgent uses specific tactics concomitantly with engaging in live ammunition, it allows for an unambiguous (or at least less ambiguous) coding of the civil war[73]. Concretely, five tactics presuppose a certain militaristic, logistic, and political weakness of the actor who uses them: looting, scorched earth tactics[74], human shields, hostage taking, and kidnapping. In fact, looting, hostage taking, and kidnapping all suggest that the given actor faces financial trouble, which can greatly undermine its militaristic power and consequently its legitimate governing authority. Also, an actor that is forced out of a community or location (by

[71] The mode of killing- through the choice of weaponry- very rarely overlaps with another, meaning that there exist very few instances where civilians could have died as a result of a direct shooting or airstrikes at the same time (cases that fit the aforementioned category were considered missing because of ambiguous coding).
[72] The type of civil war is a categorical variable taking a value of 1 for conventional civil wars, while the values of 2 and 3 constitute episodes of irregular and symmetrical nonconventional warfare, respectively.
[73] Note that in cases whereby there is no data on auxiliary tactics when both incumbents and insurgents were engaging in direct shooting, the observations were considered missing.
[74] In considering the example of scorched earth tactics, common sense dictates that an actor that has established a stronghold in a region will not set it on fire. Conversely, using such tactics become much more viable once that same actor loses its grip on that region.

the rival actor) can find using scorched earth tactics feasible, viable, and even beneficial: as it recently lost control over the region it used to be under its authority, the actor involved is not expected to offer strong governance or to provide for the community over which it recently ruled, quite the opposite. This tactic suggests that the actor aims at making the area it recently fled "uninhabitable" (Schneider *et al.* 2012). Also by using scorched earth tactics it implies that the actor had to flee a certain region over which it recently controlled, which is symptomatic of military and strategic weakening. Finally, using human shields implies the notion that the incumbent state has failed to provide reliable militaristic power to retaliate against the insurgent, or that the rebels have failed to consolidate their insurgency when confronting the incumbent state.

On the other hand, other tactics imply strength of one actor, relative to another, in leading counter-insurgency or insurgency operations whenever the actor is the incumbent state or the insurgent, respectively. Seven tactics are indicative of such strength: starvation, target assassination, torture, deportation, disappearances, camps, and sieges. In fact, target assassination, along with deportation, disappearances, and torture imply that the actor who uses them enjoy high quality information on 'where to strike'. Unlike kidnapping for instance, which is deemed in this study to target civilians *indiscriminately*, the aforementioned tactics aim at neutralizing *specific* targets. Thus, the presupposition here is that the actor has had to collaborate with part of the civilian population in order to gather reliable and quality information to support its counter-insurgency (or insurgency) operations. Likewise, camps and sieges entail a high concentration of military checkpoints (whether the incumbent state's or the insurgent's) within

and at the outskirts of the region that the given actor claims to control, to the point where imposing sieges and camps become feasible and sustainable[75].

More broadly, this coding should widen our conception of civil war by introducing micro-level variation to which the population is sensitive, namely when it comes to identifying a pattern to lethal violence while also contextualizing the violence unique to the intensity of civil war of which civilians pay the price. After all, weapons can change as technology evolves or as external actors intervene in order to militarily (or otherwise) assist the incumbent state (or the insurgent) in its confrontation with the current opposing actor. However, the tactics mentioned, more than often are auxiliary to the recourse to direct violence. The aforementioned tactics, such as scorched earth, unlike conventional weaponry, date back to at least the American Civil War (Pringle 2010). Thus, technologically advanced weapons, given their changing nature over time, fail to establish a clear framework of dominated vs. dominant or one of power parity between the incumbent state and the insurgent when tactics, namely given their ubiquity and historical prevalence (Arjona *et al.* 2015), therefore, the exclusion of such is warranted.

The remaining explanatory variables in this Chapter are consistent with those featured in Chapter Four. These variables once again measure the political, economic, geographic, and demographic condition of a state. The political variable included, the Polity IV score, gauges the extent to which democratic propensity can decrease the level of overall violence. It is argued here that polity scores have a pacifying impact by reducing the overall level of violence in civil wars, regardless of the type of war being fought, both on and off the battlefield[76]. The first economic

[75] Note that in instances within which the identity of the perpetrator (whether the incumbent state or the insurgent) was unclear or unknown, the observations were considered missing in order to subsequently avoid ambiguous coding of the type of civil war.

[76] Refer back to Chapter Four in order to understand how Polity scores were operationalized. Also, as pointed out on page 41, this Chapter along with Chapter Six both use Polity IV data as is (unlike Chapter Four); increasing Polity Scores indicate that the state in question is increasingly becoming democratic.

variable captures the average wealth of the population, while the second measures the overall health of the economy; the former is per capita GDP and the latter is yearly GDP growth. The data on per capita GDP is borrowed from the Maddison Project (Bolt *et al.* 2014). Each per capita GDP data point was logged in order to narrow disparities between dollarized amounts. Yearly GDP change is also an interval level data, with equal intervals of one percent. The data on elevation (the only geographic variable) is again adapted from the work of Balcells *et al.* (2014). It is measured in intervals, which considers the logged estimation of elevation per observation. Note that this covariate is time-invariant per subject in the first dataset but varies within observations (at the municipal level) in the second dataset (KOSVED)[77]. By including elevation in this particular analysis, it should indicate the effect that mountainous terrain has on the micro-level variation in the level of violence off the battlefield. Finally, the data on religious and ethnic fractionalization is borrowed from the work of Fearon *et al.* (2003), and is time-invariant in both analyses.

Two control variables are introduced: one binary variable that capture the effect of the Sub-Saharan Africa region. Kalyvas (2001; 2006) tells us that violence is deeply shaped by culture in a region. In addition, Fearon *et al.* (2003) suggest that most civil wars occur in Sub-Saharan Africa. Thus, for the two aforementioned reasons, it is warranted to control for the region of Sub-Saharan Africa[78]. Total population is also accounted for, since it is legitimate to argue that consolidated (or weak) insurgencies or counterinsurgencies can be directly explained, at least partially, by higher (or lower) population rates. Consequently, higher or lower population rates

[77] We matched the coordinates of each district-level observation (in the second dataset-KOSVED) with the exact altitude in meters so that elevation points vary as a result of variation in the coordinates (at the district-level).
[78] Note that it is even more important to control for the Sub-Saharan African region in the second dataset since out of 2833 observations (including missing data), 1766 (or 62%) occur in Sub Saharan Africa. Consequently, controlling for that region alleviates spatial dependency in the data.

can have a direct impact on the levels of violence perpetrated against both combatants and civilians (PRIO100 dataset) and strictly against civilians (KOSVED dataset). The data on population rates come from the Maddison Project (Bolt *et al.* 2014). Given the high disparity between observations in terms of population rates, the population estimates were logged.

5.4 Level of Violence: Methods

The dependent variables in this part of the study are in count mode. In other words, the variation in outcome that the study assesses relates to the variation in the number of victims, first by conflating together combatant and civilian deaths (PRIO100 dataset) and then by isolating combatant casualties and focusing exclusively on civilian deaths (KOSVED dataset). Consequently, the two sets of results are generated using negative binomial regressions.

More specifically, in the first analysis using the PRIO100 data and in the second using the KOSVED data, the model of choice is dynamic pooled negative binomial set of regressions with a "cluster by country code" option, in order to generate robust standard errors (that were not substantially different from classical standard errors; which hints to an overall robust model specification). Moreover, Poisson regressions showed serious misspecifications in the models[79]. This is mainly due to the fact that in both datasets, the variance in the number of deaths was substantially greater to the mean value of deaths[80]. Below is the algebraic representation of the function of the standard negative binomial regression:

[79] Also, the Vuoung (1989) test, run after every negative binomial regression, tells us that the z-scores of the former regressions were statistically insignificant in being different from the z-scores of zero-inflated negative binomial regressions, indicating that the specification of inflation of zero-death counts is not preferred to the standard negative binomial parameterization (Burger *et al.* 2009). This can be expected since there are a total of two zero-events in the dataset.

[80] There are approximately seven mean deaths recorded in the KOSVED dataset, while the variance is at 1061 deaths. Likewise, there are approximately 7295 mean deaths recorded in the PRIO100 dataset, while the variance is at 7.21e+08 deaths. The use of negative binomial corrects for the misspecification of the overall models by controlling for the overdispersion in the data (or when the variance is greater than the mean value) (Lindén *et al.* 2011).

$$log(\mu_i) = \alpha + \sum_{j=1}^{p} \beta_j x_{ij} + \varepsilon_i$$

Where the log at the mean value of deaths is equal to the intercept α plus the sum of the products of the covariate coefficients. Note that introducing a log term into the right-hand side of the equation will allow for a straightforward interpretation of the coefficients, similar to a linear regression. The difference between the parameter of the negative binomial and that of the Poisson mainly lies in the potential of the former to be more flexible than the latter in allowing the structure of the mean to change. Below is the relationship between the mean and the variance in negative binomial parameterization:

$$\gamma_{i=}(1-k_i)\,\mu_i \text{ and } \gamma_{i=}(1-k_i)\,\mu_i(1+a\mu_i+k_i\,\mu_i)$$

The first equation represents the mean structure and the second the variance within death counts, given the set of data γ_i. Note that whenever *k*, which represents the parameter of zero-death counts, equals or approaches zero, zero-inflated negative binomial[81] parameters become increasingly similar to those of the standard negative binomial and are also reduced to Poisson whenever *a* (or the log-transformed alpha value[82]) equals or approaches zero (Ismail *et al.* 2013).

5.5 Level of Violence: Results

The results in both analyses (meaning using the two datasets) are disaggregated into four models, which gradually introduce new explanatory variables and model specification. Model 1 features a bivariate analysis in order to capture the raw level of violence per type of civil war. Also, going from a bivariate model to multivariate should indicate the extent to which the results are robust to the inclusion of new variables. Model 2 accounts for per capita GDP, GDP growth,

[81] Zero-Inflated Negative Binomial regressions account for excess zeros (hence the name of the model) in a given set of data (Cameron *et al.* 2013).
[82] The log-transformed alpha value, denoted as *lnalpha* in the models, represents the parameter of overdispersion in the data.

ethnic and religious fractionalization[83], and rough terrain. Model 3 introduces the two control variables, namely total population and the region of Sub-Saharan Africa. Finally, Model 4 controls for the duration of each conflict and introduces duration as an exposure variable to the overall level of violence. It is deemed important to this study to control for the fact that an observation can record 25 deaths while another, documents a 1000 within the same time frame. In addition to population rates, considering duration of the conflict as an exposure variable to the overall level of violence should theoretically alleviate this dependency in the data.

Moving onto the results based on the first dataset (PRIO100), Model 1 estimated in table 5.6 puts into perspective conventional and symmetrical nonconventional civil wars in relation to irregular civil wars (the base or reference category). Two reasons can justify the fact that irregular civil wars were chosen as the reference category in both analyses. Irregular civil wars are the most frequent type of civil wars recorded in both datasets (the coding of Balcells *et al.* 2014 in the first and my own coding in the second dataset). In fact, 83.98% of all civil wars were fought irregularly, versus 13.37% and 2.65% that were fought conventionally and symmetrically but unconventionally, respectively, in the first dataset. Also, albeit more equally distributed, 64.56% of all civil wars were fought irregularly, versus 15.5% and 19.95% that were fought conventionally and symmetrically but unconventionally, respectively, in the second dataset. Thus, given the clear prevalence of irregular civil war occurrence, relative to the other two types, it seems sensible to set irregular civil wars as the reference category. Also, on a theoretical note, I argue that irregular civil wars follow a unique pathway or trajectory of violence while conventional and symmetrical nonconventional civil wars tend to behave similarly; the difference in the level of violence between

[83] The KOSVED data, from which derive the results of the second set of regressions, did not make possible the simultaneous introduction of ethnic *and* fractionalization indices into the same models because of high association between those two variables, which is explained in more detail in Table 5.7.

conventional and symmetrical nonconventional civil wars is one of degrees, and not of direction of violence. Thus, for the two aforementioned reasons, irregular civil wars were chosen as the reference category[84].

Looking at the results in table 5.6 one can see that, throughout all four models, symmetrical nonconventional civil wars are on average less violent than irregular civil wars. This observation is robust to both the inclusions of different variables (Models 2 and 3) and to alternative model specifications (Model 4). Thus, fighting a symmetrical nonconventional civil war results in 258.4% (in relative terms) fewer deaths than fighting an irregular civil war (Model 1). More specifically, fighting a symmetrical nonconventional civil war, relative to an irregular civil war, is likely to decrease the log count of deaths by 258.4%. Additionally, after introducing other explanatory variables, fighting symmetrical nonconventional civil wars, relative to fighting irregular civil wars, results in a decrease in the log count of deaths of 211.6%, 212.8%, and 205.7% (Models 2, 3, and 4, respectively). Therefore, in all the models generated, symmetrical nonconventional civil wars appear to be less violent than irregular civil wars on the battlefield.

Conventional civil wars, however, albeit positively signed, fail to explain the rise in the level of violence on the battlefield, relative to irregular civil wars[85]. While the positive sign associated with conventional civil wars is consistent with the theoretical framework, namely that conventional civil wars are more lethal on the battlefield than irregular civil wars, the results are inconclusive, due to the lack of statistical significance in accompanying this increase in the level of violence.

[84] Note that it does not matter which type of civil war is chosen to be the reference category, as the results should remain the same. However, the rationale for choosing the reference category was explained so that the reader understands the logic behind such an endeavor.

[85] Note that even when dropping the observation with the highest number of battle-related deaths (during the Chinese civil war that cost the lives of 350000 in 1946 according to the best estimates), the regressions were rerun (not shown) and conventional civil wars were still predominantly (across all models) the most violent type of civil war on the battlefield, albeit remaining statistically insignificant.

Moving onto the auxiliary explanatory variables and looking closely at polity scores, the results suggest that when at war, more democratic states tend to cause fewer deaths than their counterparts, or less democratic nations. With every interval increase in a polity score there is a decrease in the log count of deaths anywhere between 108.9 and 109% (Models 2, 3, and 4). These findings provide support for Hypothesis 7. Likewise, per capita GDP appears to lower the number of casualties. In fact, with every interval increase of per capita GDP there is a 186.9% decrease in the log count of deaths (Model 2), along with a 184.4% and a 183% decrease in the log count of deaths with every interval increase in per capita GDP (Models 3 and 4, respectively). GDP growth, surprisingly positive, is devoid of any statistical relevance when explaining the variation in the overall level of violence on the battlefield. Also, ethnic fractionalization has actually the strongest substantive effect on decreasing the death count on the battlefield. In fact, with every increase in the probability of randomly selecting two individuals from different ethnicities—which is the parameter of ethnic and religious fractionalization indices elaborated in the work of Fearon *et al.* (2003)—the level of overall battlefield violence decreases the log count of deaths by 359.8%, 358.3%, and 357.3% in Models 2, 3, and 4, respectively. Note that the remaining variables, namely religious fractionalization, elevation points (mountainous terrain), population rates and the Sub-Saharan Africa, are all devoid of statistical significance in explaining the variation in the log counts of deaths that succumbed to battlefield violence.

Table 5.6. Negative Binomial Regressions on Combatant and Civilian Deaths

	Model 1	Model 2	Model 3	Model 4
Dependent variable: Battle-Related Deaths (PRIO100 data)				
Conventional Civil Wars	1.091	0.333	0.261	0.377
	(0.70)	(0.32)	(0.33)	(0.34)
SNC Civil Wars	-1.584**	-1.116*	-1.128*	-1.507*
	(0.50)	(0.44)	(0.44)	(0.43)
***Reference Category*:** Irregular Civil Wars				
Auxiliary Variables:				
Polity Scores[a]		-0.089***	-0.089***	-0.090***
		(0.02)	(0.02)	(0.02)
Per Capita GDP[a]		-0.869***	-0.844***	-0.830***
		(0.13)	(0.13)	(0.13)
GDP Growth[a.b]		0.069	0.041	0.045
		(0.06)	(0.08)	(0.08)
Ethnic Frac.		-2.598***	-2.583***	-2.573***
		(0.60)	(0.71)	(0.72)
Religious Frac.		0.423	0.548	0.276
		(0.68)	(0.77)	(0.81)
Rough Terrain[b]		0.101	0.090	0.067
		(0.11)	(0.14)	(0.15)
Population[a.b]			0.030	0.018
			(0.09)	(0.09)
Sub-Saharan Africa			0.530	0.530
			(0.53)	(0.53)
lnalpha				
Constant	0.917***	0.496***	0.495***	0.500***
Pseudo R-Square	0.005	0.038	0.038	0.038
No. Of Observations	905	895	895	895

a. Lagged one year. b. Logged. Robust standard errors clustered by country are in parentheses. P-values: * p<0.05, ** p<0.01, *** p<0.001. Note: Standard Errors of constants are not shown. Note: SNC: Symmetrical Nonconventional.

Below are the results explaining the variation in the overall level of violence perpetrated strictly against civilians by the warring actors, namely the incumbent state and the insurgent. As one can see in table 5.7, the results which put into perspective the subsequent impact of the main independent variable—the type of civil war—on the variation of the level of violence perpetrated strictly against civilians (or non-combatants) support the argument that irregular civil wars are, on average, much deadlier than conventional civil wars.

Fighting conventional civil wars, relative to irregular ones, causes a decrease of 211.3% in the log counts of civilian deaths. In fact, fighting conventional civil wars, relative to irregular ones, reduces the log count of deaths by 165.6, 169, and 172.3% (Models 2, 3, and 4, respectively). Also, fighting symmetrical nonconventional civil wars, in relation to irregular civil wars, produce a decrease in the log count of civilian deaths of 175.4%, (Model 1). Likewise, whenever symmetrical nonconventional civil wars are fought, the log count of civilian deaths is expected to decrease by 171.1, 168.2, and 168.2% (Models 2, 3, and 4, respectively), relative to irregular civil wars.

Thus, looking at all types of civil war at both macro and micro-levels of analysis, irregular civil wars are the deadliest, more so off the battlefield than on it, and thus more lethal for civilians than for combatants. Moreover, it appears that controlling for the duration of the conflict (Model Four) makes symmetrical nonconventional civil wars deadlier for civilians than conventional warfare. The implication for future work on civil war that would adhere to the disaggregation of civil wars as a function of how they are fought is that protracted conflicts typically suggest that, relative to irregular civil wars (still the deadliest for civilians), symmetrical nonconventional warfare generates more violence perpetrated against civilians than conventional ones.

Table 5.7: Negative Binomial Regressions on Civilian Deaths

	Model 1	Model 2	Model 3	Model 4
***Dependent variable**:* Battle-Related Deaths (PRIO100 data)				
Conventional Civil Wars	-1.113***	-0.656**	-0.690**	-0.723***
	(0.2)	(0.23)	(0.22)	(0.19)
SNC Civil Wars	-0.754*	-0.711***	-0.682***	-0.682***
	(0.37)	(0.19)	(0.19)	(0.18)
***Reference Category*:** Irregular Civil Wars				
Auxiliary Variables:				
Polity Scores[a]		0.077	0.101	0.084
		(0.04)	(0.05)	(0.06)
Per Capita GDP[a]		-0.772**	-0.077	-0.303
		(0.28)	(0.31)	(0.41)
GDP Growth[a.b]		0.169**	-0.369***	-0.383***
		(0.06)	(0.11)	(0.11)
Ethnic Frac.[b]		-2.298*	-2.825*	-2.537*
		(1.14)	(1.17)	(1.11)
Rough Terrain[b]		-0.284	-0.201	-0.124
		(0.3)	(0.38)	(0.39)
Population[a.b]			0.496**	0.525**
			(0.17)	(0.18)
Sub-Saharan Africa			0.404	-0.022
			(0.44)	(0.62)
Duration				-0.001
				(0.01)
lnalpha				
Constant	0.541**	0.379**	0.374**	0.371**
Pseudo R-Square	0.0121	0.0319	0.0328	0.0334
No. Of Observations	742	659	659	659

a. Logged. b. Note that, unlike the dataset used to generate table 5.6, the data that we use to measure civilian victimization is set in a way whereby ethnic and religious fractionalization are highly positively correlated (88.97%). Thus, we run religious fractionalization separately (results not shown) in order to avoid collinearity between explanatory variables and find an overall decreasing level of violence against civilians associated with religious fractionalization scores; which is expected since both ethnic and religious fractionalization indices are again highly positively correlated. Thus, given that ethnic fractionalization strongly decreases the overall the level of violence against civilians, religious fractionalization alleviates civilian victimization.

Robust standard errors clustered by country are in parentheses. P-values: * p<0.05, ** p<0.01, *** p<0.001. Note: Standard Errors of constants are not shown. Note: SNC: Symmetrical Nonconventional.

Looking at the remaining auxiliary variables, higher polity scores, appear to stimulate violence against civilians. In fact, Models 2, 3 and 4 show an increase (albeit statistically insignificant) in the level of civilian deaths as a result of interval increases in polity scores, which

clearly contradicts Hypothesis 7[86]. Moreover, per capita GDP, while statistically significant (Model 2) in its effect to decrease the log count of civilian deaths (by 177.2%), it loses its statistical significance after controlling for population rates and the Sub-Saharan African region (Model 3) and introducing duration of the conflict as an exposure variable to the level of overall deaths (Model 4). The loss in significance may be attributed to two distinct yet related circumstances. First, per capita GDP, because of the time periods (cluster of days) in which the data from KOSVED is set, fails to vary substantively from one observation to the next. Also, it can be argued that per capita GDP increases (or decreases) may have a more nuanced temporal relationship that can conceivably be captured by a one year posterior lag (_n+1) on the overall level of violence perpetrated against civilians during a civil war[87]. Unfortunately, mainly due to the structure of the dataset, it is more than challenging to escape or even correct for the aforementioned two biases. This issue is less severe for the equations estimated in Chapter 4 since the time structure is in years (thus allowing for a delayed effect of per capita GDP on influencing the direction of violence) and since there are no repeated time values in the PRIO100 dataset, as opposed to the KOSVED dataset[88]. The same exact observation can be made when looking at GDP growth rates, which, albeit statistically significant, gauges a yearly measure of economic activity when the rest of the data is set in days or weeks. Thus, Hypothesis 8 can only be partially confirmed. Also, ethnic

[86] It should be noted that, as a result of supposing that an instrument that captures the overall democratic propensity of a given polity on a national level can adequately define the democratic polity at the subnational level, polity scores may not be the optimal measure of democracy. Unfortunately, there exists no work, to the best of my knowledge, which attempts to measure potential differences in democratic polity within a state itself, at the subnational unit, let alone in a cross-sectional design.

[87] Given that the set of data is in days or cluster of days, lagging the data by one year is counterproductive and distorts with the veracity of the data. Also, lagging variables that are in daily values by years is somewhat of an ecological fallacy, whereby different levels of analysis become confounded when they should be independent from one another. Finally, lagging by one year (or more) is counterproductive when there are repeated time values in a given dataset (which is the case of the data of KOSVED).

[88] While some works have suggested road density as a potential proxy for per capita GDP on a subnational level (Buhaug and Rød 2006), we have unfortunately failed to find complete, reliable, and evolving data on the subject matter.

fractionalization greatly reduces the level of overall violence perpetrated against civilians. So, with every standard deviation increase in ethnic fractionalization there is a decrease in the log count of civilian deaths by 329.8, 382.5, and 353.7% (Models 2, 3, and 4, respectively).

Given the results of the macro-level variation in battlefield lethality (PRIO100 dataset), one can argue that 'new' civil wars (since the year 1985 onward), provide continuity both in space and time of the same observation; that is, civil wars-regardless of their type-appear to cause fewer battle-related casualties in highly ethnically fractionalized communities while religious fractionalization alleviates civilian victimization[89] while inflating battle-related deaths. Likewise, civilian victimization seems to be less prevalent and less intense within communities with high ethnic fractionalization at war.

Moving onto the geographic covariate, rough terrain, the latter is devoid of any statistical significance in decisively indicating a vector or a univocal direction of violence perpetrated against civilians (as it is negatively signed throughout Models 2, 3, and 4). The only possible explanation for the lack of statistical significance is the fact that throughout most of the civil wars recorded in the KOSVED dataset, the number of civilian casualties is randomly distributed across multiple and different elevation points, which suggests a lack of a systematic pattern in the diffusion of violence across different elevation points. The coding of elevation, as opposed to that of most of the auxiliary variables[90], rigorously reflects each location's longitude and latitude coordinates so that elevation points corresponding to actual district-level localities could be generated. The lack in significance of the impact of elevation on the overall variation in the level of violence contradicts the findings of Kalyvas (2006) and Kalyvas *et al.* (2009), which focus exclusively on the level of

[89] Again the results for how religious fractionalization alleviates overall civilian victimization (KOSVED dataset) are not shown.
[90] The auxiliary variables exclude the main independent variable, or the type of civil war being fought.

civil war violence perpetrated against civilians in Greece (1943) and in the Republic of Vietnam (1969) respectively.

5.6 Conclusion:

To conclude, irregular civil wars are the deadliest for civilians. Although the results for conventional civil wars are weaker, it is suggested that conventional civil wars are the most lethal on the battlefield. Both analyses in this Chapter are consistent, in that irregular civil war is the most lethal form of warfare insofar as civilians are concerned, and relative to the two other types of civil war. Finally, this finding has empirical implications when it comes to identifying the nature of future civil wars, which is that there should be an urgency to humanitarianly intervene when a given civil war is of an irregular nature.

Chapter 6:
Consolidation Against Civil War

The purpose of this Chapter is to delineate a clear pattern whereby states decisively consolidate against the risk of civil war[91] across time and space, utilizing a global sample.

6.1. Consolidation Against Civil War: Research Design

For the purposes of this study, states either move toward or away from consolidation against civil war. Consolidation is conceived of as a quality to be inferred rather than one being directly measured. Consolidation against civil war signifies that, as time passes, states should experience a decisive decrease in the number of civil wars fought. Conversely, moving away from consolidation against civil war suggests that states become increasingly civil war-prone, as time passes. As explained in Section 3.4, it is important to analyze historical variations as far back as the data allows. Also, considering a world sample of cases should theoretically provide a representative, clear, and visible dynamic of consolidation against civil war. Thus, this section builds upon the data on civil war collected from the Correlates of War, which records civil wars since the beginning of the 19th century all the way to 2007[92].

In order to be able to confirm or reject the hypotheses, this study undergoes seven sets of disaggregation. This disaggregation captures how different qualities of nations, such as their democratic or autocratic propensity, their respective levels of wealth and economic growth rates, can influence the historical points in time upon which asserting that they have consolidated against civil war becomes feasible. The first analysis looks at the overall world sample of cases between 1820 and 2007[93]. The second and third analyses focus on states whereby democracy has been

[91] In this section all three types of civil wars are conflated together for the reason mentioned in section 3.4.
[92] Unlike the PRIO dataset, which focuses on civil wars that have occurred between 1946 and 2008.
[93] See Appendix C for more detail on dropped cases mainly because of a general lack of data.

prevalent and/or autocracy has been rampant throughout the history since a state's formation. The fourth and fifth analyses assess rich and poor nations. Finally, the sixth and seventh analyses evaluate the performance or impact of states experiencing economic prosperity versus those experiencing lower levels of economic growth on the consolidation against civil war. Each discrete analysis features the same number of observations, which is 188. Each observation represents a year between 1820 and 2007. Every observation can record anywhere between zero and ten (the maximum) civil wars for a given year. This study is thus built using a simple time-series design (without a cross-section specification) whereby the years of interest are between 1820 and 2007 inclusive. The unit of analysis is the total civil war count per year.

6.2. Consolidation Against Civil War: Hypotheses

Hypothesis 10: *States that have a higher democratic propensity should move toward consolidation against civil war while their autocratic counterparts should move away from consolidation.*

Hypothesis 11: *States that experience a robust increase in wealth should move toward consolidation against civil war while their less wealthy counterparts should move away from consolidation.*

Hypothesis 12: *States that experience high economic growth levels should move toward consolidation against civil war while lower income growth earners should move away from consolidation.*

6.3. Consolidation Against Civil War: Source of data and operationalization of variables

a. Dependent variable[94]

The dependent variable is a count variable, which represents the number of civil wars fought per year. Since the data from the COW dataset, a civil war occurs whenever the death toll of combatants reaches 1000 in a twelve-month period (Sarkees *et al.* 2010).

[94] Section 6.3.1 is intentionally brief since the coding along with the data and what constitutes civil war were amply outlined and explained in section 4.3.1.

b. Independent variables

The first independent variable is measured using the polity scores. To reiterate what has been explained in previous Chapters, the variable 'polity scores' is an interval level variable which measures the democratic propensity of a state on a scale of 21 values. The value +10 represents a consolidated democracy while a value of -10 constitutes an institutionalized autocracy (Marshall and Jaggers 2014). The way we gauge how democracy or autocracy has been recurring for a same state since its formation is to sum all Polity IV individual annual scores per state and consider an overall positive sum as indicative of an overall historically rooted prevalence of democracy versus a negative sum suggestive of an overall historically embedded preponderance of autocracy. This method should provide a more realistic assessment of the democratic propensity or the autocratic leaning per state throughout the first half of the 19th century (since 1820) until 2007. Democracy is a political system that entails a process of long-term series of institutional changes that a given state undergoes. Thus, considering individual Polity IV data scores as representing the overall variation in the level of democracy may hinder the complexity behind the phenomena of democratization and subsequent democratic consolidation (or conversely "autocratization" and subsequent autocratic consolidation). Also, this method (of considering the total sum of scores per state) preserves all 21 possibilities that the original coding of Polity IV promises (going from -10 to +10 and including a score of 0)[95].

The second independent variable that is included in the models is per capita GDP. This variable measures the 'wealth of nations' (Smith 1977). The data are borrowed from the Maddison Project (Maddison 2008; Bolt *et al.* 2014). The data itself measures the dollar amount of the yearly wealth produced by the state on the territory of the state divided by the total population. The

[95] Note that the nuance integral to Polity IV coding, which relates to the 21 possibilities in terms of regime scores, is preserved throughout Chapters Four, Five, and Six.

variable per capita GDP has a nominal base in Geary-Khamis dollars[96]. The data on per capita GDP is logged and lagged by one year. Logging helps to normalize (to an extent) the distribution of data points of per capita GDP while lagging this variable by one year helps to alleviate endogeneity. This variable is disaggregated into two ranges of values. The first division distinguishes high per capita GDP values by exclusively focusing on the 75th percentile and above, while the second division accounts for states that are at the 25th percentile or below. The former threshold should represent wealthy nations while the second represents poor nations. Again, it is argued here that values around the median (or the 50th percentile), while more representative of the overall distribution, do not provide a clear demarcation between rich and poor economies. Thus, this threshold should reliably reflect the intended variation in the wealth of nations.

GDP growth is the third and final explanatory variable that is included[97]. The data for this variable is found in the Maddison Project (Maddison 2008; Bolt *et al.*2014). These data, similar to per capita GDP, has as a nominal base in the Geary-Khamis hypothetical dollar currency. The variable GDP growth is logged and lagged by one year for the reasons mentioned earlier. As explained in the theory section, GDP growth is often used as a proxy measure for unemployment. So, in order to differentiate between states that are economically prosperous and those that experience lower levels of economic growth throughout the sample, a disaggregation or split in the data is made at the 75th and 25th percentile. Again, this should give way to a clear distinction between states that are in the 75th percentile and above and those are at lower levels of economic growth, or at the 25th percentile and below.

[96] Geary-Khamis is a hypothetical currency that helps to alleviate wide disparities in amounts of dollars by normalizing (to an extent) differences in purchasing power across states (Bolt *et al.* 2014).
[97] Note that per capita GDP and GDP growth only correlate 32% of the time throughout the sample.

6.4. Consolidation Against Civil War: Methods

In this Chapter a change-point analysis on the frequency of civil war throughout time and space is operationalized. The change-point modeling is a subtype of Bayesian analysis, derived from the Bayes rule or theorem. This theorem helps to compute a probability of an event given the probability of a related event, such as the past frequency of its occurrence for instance. The probability of a related event is based on prior information that we have of that event, which can be denoted as y (Thomson 2014, 3). Thus, the probability that ascribes to the Bayesian philosophy can be represented below as:

$$p(\theta|\gamma) = \frac{p(\theta|y)p(\theta)}{p(y)}$$

Whereby parameter θ (theta)represents the prior distribution, and the probability $p(\theta|\gamma)$ represents what is referred to as the posterior distribution (Thompson 2014, 3). By including the predicted probability distribution y^* (or posterior likelihood distribution) we can write:

$$p(y^*|y) = \int p(y^*|\theta)p(\theta|y)d\theta$$

Whereby the predicted probability of event $p(y^*|y)$ denotes the posterior likelihood distribution given the past set of data *y*, which derives from the primitive function of the predictive probability given the parameter of the prior θ, multiplied by the probability of the distribution of the prior given the past set of data *y,* overall multiplied by the distribution of the prior[98]. It is important to underline that the core function of Bayesian analysis is the integral, or the primitive. Put otherwise, Bayesian analysis calculates a probability, as a result of tracing the geometric area through which

[98] Note that it is the researcher who choses and sets the prior distribution a certain way. In the case of this paper, since the data is in count, we have two main options when it comes to prior distribution. First is what is referred to as a *flat* prior of both means before and after the change point (explained later) and of the change point itself or a *uniform* prior (with two set parameters more than often representing a mean of zero and a variance of one (Thomson 2014) of both means before and after the change point.

the posterior likelihood spatially overlaps with the likelihood of the set of data *y* times the probability distribution of the prior θ. Thus, even in the case of Poisson regressions[99] on yearly civil war counts through change-point analysis, it remains a question of posterior probability. In Bayesian analysis, the posterior distribution is the key parameter of interest.

This method could be applied to numerous different research questions that are posed in the literature within the discipline of political science[100]. Conventional frequentist statistics such as logistic regressions, whereby the key outcome, or the probability of a civil war occurrence for example, is conditional upon reproducing the same sample indefinitely in order to get a confidence interval. On the other hand, Bayesian modeling computes a posterior distribution given how informative or uninformative are a set of data *y* and distribution of prior θ. In the former case of conventional statistics, we are essentially asking reality to remain unchanged and to be replicated indefinitely so we can deduce results that are conclusive or within the 95% interval. The 'empirical realism'—to borrow from Svolik (2015,717)—that Bayesian models portray, lies in the fact that past reality, which can only occur once, is able to determine future predictions.

More specifically, the results of this section were generated after utilizing Poisson regressions and running the set of data through Monte Carlo Markov Chain (mcmc) simulation, which is a probabilistic model that runs numerous trials assuming a random distribution in the set of data *y*, or more precisely the aggregate yearly civil war count. The below probability of delineating a *y* number of civil wars given their past frequency can be written as:

[99] The test of overdispersion showed that that overdispersion was not statistically different from 1, thus Poisson regressions were used in the models. Note that the mean count of civil wars is around 1 and the variance around 3.
[100] For more works that utilize Bayesian models in political science, see (Hays *et al.* 2003; Spirling 2007; Park 2010; Svolik 2015). Note that the aforementioned works use much more sophisticated techniques such as Gibbs sampling method for achieving higher efficiency in the iterations *inter alia*, and so forth. This study is merely a modest contribution to the literature by introducing Bayesian analysis to future civil war studies.

$$p(y|\lambda) = \frac{\lambda^y e^{-\lambda}}{y!\,(e^{-\lambda})}$$

Whereby the number of civil war *y* can be anywhere between 0 and 10, the frequency of civil war or λ can be anywhere between 0 and 188, meaning that every year will be a year of civil war. Thus, the probability of civil war, given its frequency, should equal to the rate of civil war to the exponent civil war count times the exponential function of negative λ (or the exponential function of $\lambda^{1/2}$ over the permutation of civil war count (from 10 to 1) times the exponential function of $\lambda^{1/2}$. Thus, the equation also equals the rate of civil war to the exponent "*y*" over "*y!*", or the permutation of *y*.

The above equation can help justify why change-point models were used. Change-point models, although highly computation-intensive (through iterations), are extremely easy to explain and interpret. Change-point models generate a point in time (here in years) during which a clear pattern of civil war count was reversed, going from an increase to a decrease or vice versa. Looking at the data between 1820 and 2007 makes discerning this pattern impossible to the naked eye. Thus, the only purpose of change-point models is that it generates a clear pattern in the evolution of count data points whereby a significant change in count of civil wars is noted during a specific point in time. This method essentially splits the data into two nodes, referred to as *mu1* and *mu2* thereafter. The change-point value, referred to as *cp* thereafter, always falls between mu1 and mu2. Simply put, both mu1 and mu2 represent the mean values before and after the split at the cp value, respectively. Below is the relation between the probabilities of civil war occurrence, given its frequency over time $p(y|\lambda)$, mu1 (μ_1) and mu2 (μ_2):

$$p(y|\lambda): \begin{cases} \frac{\mu_1}{\mu_2} \geq 1; then\ p(y|\lambda)\ approaches\ 0 \\ \frac{\mu_1}{\mu_2} \leq 1; then\ p(y|\lambda)\ approaches\ 1 \end{cases}$$

Given the set of data and the operationalization of the variables outlined in Section 6.3, the results should be indicative of a pattern whereby states that have had a high autocratic propensity since their formation, have been the poorest, and/or have faced low levels of economic growth fail to consolidate against civil war, relative to their antipodal counterparts.

6.5. Consolidation against Civil War: Results

Table 6.1: Aggregate Count of Civil War between 1820 and 2007[101] (Model One)

	Mean	Std. Dev.	MCSE	Median	[95% Cred. Interval]	
mu1	.8417249	.0761246	.002741	.840038	.6909503	.9986479
Change-Point	1959.707	2.010102	.064942	1960.136	1955.059	1962.798
mu2	2.747607	.2443122	.013904	2.744085	2.27107	3.283726
Posterior summary statistics					MCMC sample size =	10,000
Ratio: {mu1}/ {mu2}						
	Mean	**Std. Dev.**	**MCSE**	**Median**	**[95% Cred. Interval]**	
Ratio[102]	.3086869	.0385841	.001601	.3064301	.2391549	.3902686

Model 1 (Table 6.1) tells us that the world has become more civil war-prone after 1959, relative to before that date[103]. In fact, the world, on average, experienced .84 civil wars per year before 1959, in contrast with 2.74 civil wars per year post-1959. Thus, after 1959, the mean number of aggregate civil wars increased by a factor of approximately 3.24 (or the inverse of the ratio {mu1/mu2[104]}). Several factors may explain this decisive increase in the frequency of civil wars fought since the late 1950s: first, one should relativize by noting that the 20th century has witnessed

[101] Diagnostics of all seven models can be found in Appendix C.
[102] Note that the results of the ratio {mu1/mu2} are not a simple result of mu1 over mu2 as they take into account multiple other parameters such as the standard deviations of both mu1 mu2 and the cp value, the MCSE (or the Monte Carlo Standard Error) and how wide are the 95% credible intervals.
[103] Note that this increase in number of civil wars can be attributed to things such as the formation of new states, wars of independence (Venezuelan independence in the 1840s, Algerian independence in the early 1960s, to name only two), and so forth.
[104] Note that the value of MCSE gauges the extent to which the posterior mean value (post-1959 or after the change-point value) is precise (Marchenko 2015). Therefore, the more the MCSE tends to zero, the more reliable is the posterior prediction of increase (or decrease) in civil war counts.

the formation of multiple new states. The African continent in the 1960s and more specifically the wave of decolonization of African states in the 1960s (which are considered in this study as episodes of civil war) can aptly serve as an illustration to the formation of new states, and *a fortiori* an increase in civil war likelihood over time. Thus, almost mechanically, the likelihood and subsequently the number of civil wars fought potentially increase. Moreover, this rise in the number of civil wars fought can be explained by the war dynamic of the Cold War, which did not militarily and frontally oppose the United States to the Soviet Union, but rather exacerbated proxy wars that were typically civil wars (Cambodia 1967-75 or Vietnam 1955-1975, among others). The increase in the number of civil wars fought (table 6.1) appears to be supported by a relatively small credible interval of years [1955; 1962]. Consequently, one can posit that any of the explanatory variables that actually *decreases* the mean number of civil wars after a given change-point value essentially resists the overall world trend of increase in civil war count. As a result of resisting or even counteracting this overarching increasing trend of civil war count over time, this explanatory variable should provide sufficiently strong evidence of its importance in terms of having an impact on predicting future civil war counts. In other words, the predictive power of this variable would not be dependent upon or associated with the passing of time, which can be referred to as time dependency, but instead would have a unique and *ad hoc* reason for decreasing the number of civil war counts as time goes by.

Table 6.2: History of Democratic Propensity[105] (Model Two)

	Mean	Std. Dev.	MCSE	Median	[95% Cred. Interval]	
mu1	1089797	.0290751	.00125	.1061621	.0594852	.1736347
Change-Point	1943.191	3.963758	.149003	1943.233	1934.028	1949.902
mu2	.6820101	.1030151	.005626	.6800768	.4918572	.9037547
Posterior summary statistics					MCMC sample size =	10,000
Ratio: {mu1}/ {mu2}						

[105] The sum of polity scores per state is overall positive.

	Mean	Std. Dev.	MCSE	Median	[95% Cred. Interval]	
Ratio	.1635815	.0507891	.002635	.1576031	.0839838	.2773234

The second disaggregation in the data is made between states that have, more often than not, been democratic[106]. Looking at the results in Table 6.2, the cp is year 1943. This means that a clear and decisive change in the pattern of civil war count occurred during the early 1940s in states with democratic propensity. If we look closely at the ratio of {mu/mu2}, we also note an increase in civil war count post-1943, relative to before that date. In fact, the results suggest that civil wars increased by a factor of approximately 6.25 between 1943 and 1950 when compared to the period of time between 1934 and 1942. The credible interval [1934; 1950] is relatively small, which is well supported by a small MCSE in that it is close to zero (.002635). Nonetheless, sets of interval hypothesis testing were run in order to measure, based upon increased probabilities of civil war occurrence (as the ratio is less than one), which specific years were most prevalent in determining the posterior likelihood of civil war counts[107].

Table 6.3: History of Autocratic Propensity[108] (Model Three)

	Mean	Std. Dev.	MCSE	Median	[95% Cred. Interval]	
mu1	.6808982	.0694552	.002388	.6779427	.5563313	.8254542
Change-Point	1960.461	1.367807	.058164	1960.474	1957.651	1963.019
mu2	2.094353	.2151719	.007537	2.082153	1.704627	2.531568
Posterior summary statistics					MCMC sample size =	10,000
Ratio: {mu1}/ {mu2}						
	Mean	**Std. Dev.**	**MCSE**	**Median**	**[95% Cred. Interval]**	
Ratio	.3286462	.0484539	.001694	.3245295	.2467777	.4341826

In relation to Model 2, Model 3 indicates that while democratic states, or more precisely states that have had a historical prevalence of democracy as a regime, experience increasing civil

[106] Note that all three explanatory variables, polity scores, per capita GDP, and GDP growth were lagged by one year in order to alleviate (to an extent) problems of endogeneity in the vectors of causality.
[107] To see the results, refer to Appendix C.
[108] The sum of polity scores per state is overall negative.

war counts in the period post-1943, states that have a high autocratic propensity experience comparatively higher increased rates of civil wars after 1960. In fact, the mean number of civil wars in states with a high autocratic leaning is approximately .68 per year before 1960 *versus* roughly 2.01 after 1960, or a 200% increase, in relative terms. Thus, civil wars in states with a high autocratic propensity have increased by a factor of 3.04 (or the inverse of the ratio {mu1/mu2}). Therefore, what can be said is that whether states have had a higher propensity for democratic versus autocratic types of rule does not appear to matter much with respect to their consolidation efforts against civil wars. This finding clearly contradicts both the theory on democratic *versus* autocratic rule and their respective odds of consolidation against civil war outlined in Section 3.4 along with Hypothesis 10. More broadly, the same findings put in doubt the notion that democracies are intrinsically peaceful. In revisiting the main premise of democratic peace theory, which posits that democracies neither wage war against each other nor against non-democracies, and in assuming that peace is absolute, meaning that a state experiences both peace abroad *and* domestically, it is clear that democratic peace theory is in need of further revision[109]. While the results strongly suggest that non-democracies are more susceptible than democracies to be embroiled in civil wars over time, the same results also strongly imply that peace, or the absence of civil war, is not innate to the democratic quality of nations.

Models 4 through 7 measure the impact of macro-economic qualities on the consolidation efforts of states against civil wars. States with high levels of per capita GDP levels seem to have moved toward consolidation against civil wars since the early 1930s. In fact, before the year 1931, states that had high levels of per capita GDP were fighting .55 civil wars per year, or a little over one every two years. After 1931, this number dropped to .10 civil wars per year, the equivalent of

[109] For more on the "flawed logic of democratic peace theory", see Rosato (2003).

one every ten years. The ratio {mu1/mu2} indicates that the overall number of civil wars fought in high per capita GDP states have decreased by a factor of over 6.

Surprisingly, states that have experienced lower levels of per capita GDP overall seem to have also moved toward consolidation against the risk of civil war, if we look at the ratio {mu1/mu2}, which is above one. However, if we look more closely at the standard deviation of the cp value regarding those same low per capita income earners, and if we also turn our attention to the credible intervals of that cp value, we can deduce that the results are far from conclusive. This is unlike the results that describe the consolidation dynamic of states with high per capita GDP.

Also, assuming that states with low per capita GDP do consolidate over time, it takes them on average about forty more years to do so than high per capita GDP economies. In fact, while high per capita GDP economies seemed to decisively consolidate against civil war by 1931, the same efforts of consolidating against civil war occurred forty years later for low per capita GDP economies, in 1971. Thus, this forty-year lag is consistent with the theoretical expectation outlined in Section 3.4; namely, that high levels of wealth decisively help states consolidate against civil war.

Table 6.4: High Level of Wealth[110] (Model Four)

	Mean	**Std. Dev.**	**MCSE**	**Median**	**[95% Cred. Interval]**	
mu1	.5536223	.0703404	.002451	.5486186	.4240187	.7011647
Change Point	1931.139	2.536199	.237297	1930.4	1929.002	1937.704
mu2	.104305	.0351087	.001547	.1008695	.0462651	.1799649
Posterior summary statistics					MCMC sample size =	10,000
Ratio: {mu1}/ {mu2}						
	Mean	**Std. Dev.**	**MCSE**	**Median**	**[95% Cred. Interval]**	
Ratio	6.023576	2.56003	.094036	5.387811	2.881159	12.54793

[110] 75th percentile and above within the per capita GDP distribution.

Table 6.5: Low Level of Wealth[111] (Model Five)

	Mean	Std. Dev.	MCSE	Median	[95% Cred. Interval]
mu1	.5831128	.0699657	.003168	.5769088	.464114 .7456413
Change Point	1971.745	24.47758	1.38565	1974.993	1934.603 2006.195
mu2	.6157736	.2323711	.012949	.570801	.2735691 1.253079
Posterior summary statistics					MCMC sample size = 10,000
Ratio: {mu1}/ {mu2}					
	Mean	**Std. Dev.**	**MCSE**	**Median**	**[95% Cred. Interval]**
Ratio	1.100155	.5040108	.03739	1.014374	.4465738 2.242638

Table 6.6: High Level of Economic Development[112] (Model Six)

	Mean	Std. Dev.	MCSE	Median	[95% Cred. Interval]
mu1	.6060987	.0812929	.002958	.6008064	.4646534 .783857
Change Point	1948.813	31.84656	2.17791	1935.991	1902.491 2005.14
mu2	.5307484	.1560064	.013214	.4985709	.3149941 .9297699
Posterior summary statistics					MCMC sample size = 10,000
Ratio: {mu1}/ {mu2}					
	Mean	**Std. Dev.**	**MCSE**	**Median**	**[95% Cred. Interval]**
Ratio	1.243634	.4063719	.024409	1.228733	.5721428 2.07353

Table 6.7: Low Level of Economic Development[113] (Model Seven)

	Mean	Std. Dev.	MCSE	Median	[95% Cred. Interval]
mu1	.0742707	.0234218	.001137	.0726553	.0352812 .125467
Change Point	1957.223	3.785826	.230447	1957.546	1946.626 1962.741
mu2	.8278403	.1328427	.005077	.8214509	.5886694 1.093956
Posterior summary statistics					MCMC sample size = 10,000
Ratio: {mu1}/ {mu2}					
	Mean	**Std. Dev.**	**MCSE**	**Median**	**[95% Cred. Interval]**
Ratio	.0918956	.0329435	.001444	.0884596	.0426067 .1665183

[111] 25th percentile and below within the per capita GDP distribution.
[112] 75th percentile and above within the GDP growth distribution.
[113] 25th percentile and below within the GDP growth distribution.

We now assess the impact of economic growth on a state's consolidation efforts against civil war. Relative to the results of Models Two through Five, the findings in Models Six and Seven are weaker and not as conclusive. This is mainly due to the large credible intervals upon which the prediction of consolidation or non-consolidation against civil war is conditioned. Nonetheless, Model Six clearly suggests that economies that have experienced robust and high GDP growth rates seem to have move toward consolidation against civil wars in the late 1940s, or 1948 to be exact. In fact, while there were about .64 civil wars fought yearly, on average, before 1948, versus .53 civil wars fought yearly, on average, post-1948. This marginal difference does not allow for a conclusive and decisive change in the efforts of states with high economic growth to consolidate against civil wars, as time goes by. Moreover, the strength of this prediction is highly mitigated by the large credible intervals within which the cp value situates itself. The credible intervals indicate that the overall decrease in the number of civil wars fought in states that experience high yearly GDP growth rates could have occurred anywhere between 1902 and 2005[114]. Evidently, this indicator does not give us clear and concise information on the exact timing of consolidation against civil war. This is why interval hypothesis testing was run in order to examine the importance of specific years during which the consolidation against civil war was most pronounced (See Appendix C).

Nonetheless, and in contrast to states experiencing high levels of economic growth rates, the results in Model Seven clearly suggest that states facing low economic growth rates appear to be much more vulnerable to civil war as time goes by, especially after 1957. In fact, prior to that year, low-income growth states fought on, average, 0.07 civil wars per year. After 1957, civil wars became much more prevalent in those same states, averaging 0.82 per year, an increase by a factor

[114] Also, the graphical output in Appendix C (Figure C.8) suggests that high levels of economic growth are not strong predictors of consolidation or (de)consolidation against civil wars.

greater than 10. This result or this positive change in civil war frequency to which states with low levels of economic development are exposed is strongly supported by a relatively low MCSE of 0.0014 and a relatively narrow credible interval [1946; 1962]. Meaning that the true value of the cp situates itself anywhere between 1946 and 1962, inclusive.

6.6. Conclusion

The results of this chapter provide three main implications for future work on civil wars. First, while non-democracies are dangerously exposed to civil war as time goes by, especially since the early 1960s onward, democracies, despite being less exposed to civil war[115], especially since the early 1940s onward, are nonetheless far from being immune to civil wars. The relation between peace and democratic propensity needs refinement. The concept of peace should be conceived of in absolute terms. In other words, a state either experiences peace internationally *and* at home, or else it is not at peace but at war. In fact, consolidated democracies (per Polity) have fought bloody civil wars in periods during which they enjoyed high democratic scores (+8 and above), (The United States, The United Kingdom, France, Greece, Spain, Costa Rica to name a few). Thus, the first concrete implication for future works on civil war is that peace, or the absence of civil war, constitutes neither a sufficient nor a necessary condition for democratic consolidation unless we are to assume that the aforementioned cases are not consolidated democracies, which is more than a challenging thesis to defend. The second implication for future work on civil wars is that the wealth of nations, in this case measured by per capita GDP, is an extremely powerful predictor of the efforts of states to decisively move toward consolidation against civil wars. Simply put, high per capita GDP has decreased the frequency of civil wars, especially since the late 1920s (1929) and early 1930s onward. Finally, in a world where states on average are dramatically more

[115] Relative to non-democracies.

exposed to civil wars, those experiencing low levels of economic development are perilously exposed to civil wars, even more so since the late 1950s.

Chapter 7
Conclusion

An emerging part of the literature on civil war has corrected for the pitfalls of previous designs by disaggregating civil wars into different types. The type of civil war becomes a function of (1) the grievances because of which types of civil war erupt, namely ethnic or non-ethnic civil wars (Cederman *et al.* 2013; Gurses 2015), or (2) can be related to how civil wars are fought (Kalyvas *et al.* 2010; Balcells *et al.* 2014). This study ascribes to the latter logic in that it builds its theoretical framework[116] on the premise that distinguishing between civil war types as a function of how they are fought is pertinent and empirically valid. One of the merits of such an approach is that the empirical validity insofar as we can identify the mode of fighting a civil war is evident: every civil war implies that conflict will take hold, and the weaponry will either make the warring actors (the incumbent state and the insurgent) fight on equal footing or position one actor at a disadvantage relative to the other, there are no other outcomes in terms of power dynamics between the warring actors; which makes deriving inferences plausible. In contrast, putting in perspective ethnic (or otherwise) grievances for which actors participate in conflict is overambitious, namely because it is extremely difficult, if not impossible, to clearly isolate and subsequently categorize the grievances of each warring actor as purely ethnic-related or otherwise.

Summary of the Findings

Chapter Four assesses the extent to which states can be exposed to the risk of civil war. Analyzing the risk exposure to civil war, as opposed to studying the *causes* of civil war, allows for an empirically realist assessment as it is suggested that studying the causes of civil war is similar to opening the Pandora's Box of epistemological measurement error. This is because civil wars

[116] Chapter six conflates all types of civil war together; the reason for such an initiative was amply explained.

are complex and that reducing their onset to a few covariates[117] as the root causes can present an epistemological hazard. A cause differs from an exposure in that the former has an original (in the strict sense of the word) impact on the phenomenon while the latter has a subsequent impact on that same phenomenon. Subsequently, economic growth, whether positive or negative, does not *cause* civil war; it causes variation in the level of wealth that is produced by an economy. However, we can say that declining per capita GDP can increase the risk exposure to civil wars. That is to say that it may be useful for future works on civil war to correct for the aforementioned epistemological fallacy by examining the risk exposure to civil war rather than its 'root' causes.

The results of Chapter Four support the need for future work on civil war, namely that the same covariates may have an impact on a specific type of civil war while failing to explain the varying degrees of exposure states have to another type of civil war. In fact, while a militarized executive in a given state increases the hazards associated with the exposure to irregular civil war, it fails to explain the risk exposure to either conventional or symmetrical nonconventional warfare. Additionally, while per capita GDP decreases the hazards associated with the risk exposure to irregular civil war, it fails to explain the risk exposure to either conventional or symmetrical nonconventional warfare[118]. In concordance with the literature, an increasing rural population significantly explains the increased hazards associated with irregular[119] civil wars (Gall 1965; Buhang *et al.* 2002; Kalyvas 2001; 2006; Holliday 2013; Bueno de Mesquita 2013). Additionally, while high religious fractionalization exposes autocratic states to conventional civil war, it fails to explain variation in the hazards associated with both irregular and symmetrical nonconventional

[117] One can conceive of civil wars as having a number of causes potentially in the hundreds, which materialize on multiple and diverse levels of analysis, ranging from the international to the neighborhood level.
[118] This finding is robust to alternative models such as Rare-Events Logistic regressions (See Appendix A).
[119] With the exception of Kalyvas (2001; 2006), there is no mention of the word 'irregular' in those aforementioned works, however the logic they lay out- in terms of asymmetry in power between the incumbent sate and the insurgent- matches the theoretical and empirical expectations that we find in this paper, regarding rural population.

warfare. Finally, high ethnic fractionalization in autocratic states makes those states vulnerable only to symmetrical nonconventional civil wars.

Chapter Five puts into perspective civil war violence committed against both combatant (or battle-related victims) and civilian units, the former representing overall battlefield lethality on a macro-level while the violence perpetrated strictly against civilians is likely to constitute overall civilian victimization outside of the battlefield on a micro-level. The results in Chapter Five clearly suggest that conventional civil wars are, on average, most lethal on the battlefield, relative to irregular and symmetrical nonconventional (the least violent form of warfare) civil wars. However, the pattern to the variation of battlefield lethality when conventional civil wars are fought does not appear to be systematic. In fact, the lack of significance in all of the estimated models suggests[120] more relevant covariates need to be introduced in future studies of civil war violence. On the other hand, the results are stronger when the level of violence in symmetrical nonconventional civil wars is in relation to irregular civil wars. In fact, the latter form of warfare is much deadlier than the former for both combatants and civilians alike, on the battlefield. Looking at the level of violence perpetrated strictly against civilians, irregular civil wars are clearly the most lethal form of warfare, relative to the two other civil war types. This finding, robust to the inclusion of other covariate estimates and to alternative model specifications, supports the notion that there needs to be a global urgency with regard to ending civil wars, specifically irregular civil wars, given that the number of civilian deaths is much greater, relative to both conventional and symmetrical nonconventional warfare.

Moreover, higher polity scores along with higher levels of GDP growth are strongly associated with an overall decrease in the level of battlefield lethality. This finding is also robust

[120] This insignificance is robust to alternative model specification and to the inclusion of the duration of conflict, which is assumed to be associated with the level of violence.

to alternative model specifications and to the inclusion of multiple other covariates. From that inference can be generated interactive terms between polity scores (and GDP growth levels) and the type of civil war being fought. This should explain which type of violence in which type of civil war, whether on or outside the battlefield, is sensitive to the variation in polity scores and GDP growth levels.

Also, higher ethnic fractionalization indices strongly decrease the level of overall violence, both on the battlefield and against civilians. As such, mountainous terrain is not a strong predictor of either increasing or decreasing levels of overall violence, and whether violence occurs on the battlefield or against civilians.

This study also stressed the importance of identifying tactics that are typically at the disposal of both warring actors whenever civil wars are fought; tactics that are concomitant with the use of weaponry. The framework related to tactical choice that this work designed should provide a template (in need of further refinement) for future works on civil war that ascribe to the theoretical and consequently the empirical distinction made between the war dynamics of conventional, irregular, and symmetrical nonconventional civil wars.

Five tactics presuppose a certain militaristic, logistic, and political weakness of the actor who uses them: looting, scorched earth tactics, human shields, hostage taking, and kidnapping. In fact, looting, hostage taking, and kidnapping all suggest that the given actor faces financial trouble, which can greatly undermine its militaristic power and consequently its legitimate governing authority. Also, an actor that is forced out of a community or location (by the rival actor) can find using scorched earth tactics feasible, viable, and even beneficial. Given that an actor has recently lost control over the region that used to be under its authority, the actor involved is not expected to offer strong governance or to provide for the community over which it recently ruled, therefore,

his tactic suggests that the actor aims at making the area it recently fled "uninhabitable" (Schneider *et al.* 2012). Moreover, using scorched earth tactics implies that the actor had to flee a certain region over which it recently controlled, which is symptomatic of militaristic and strategic weakening. Finally, using human shields implies that the incumbent state has failed to provide reliable militaristic power to retaliate against the insurgent, or that the insurgents have failed to consolidate their insurgency against the incumbent state.

On the other hand, other tactics imply strength of one actor, relative to another, in leading counter-insurgency or insurgency operations whenever the actor is the incumbent state or the insurgent, respectively. Seven tactics are indicative of such strength: starvation, target assassination, torture, deportation, disappearances, camps, and sieges. In fact, target assassination, along with deportation, disappearances, and torture imply that the actor who uses them enjoy high quality information on 'where to strike'. Unlike kidnapping for instance, which is deemed in this study to target civilians indiscriminately, the aforementioned tactics aim at neutralizing specific targets. Thus, the presupposition here is that the actor had to collaborate (at least to an extent) with some of the civilian population in order to gather reliable and quality information to support its counter-insurgency (or insurgency) operations. Likewise, camps and sieges entail a high concentration of military checkpoints (whether the incumbent state's or the insurgent's) within and at the outskirts of the region over which the given actor claims control, to the point where imposing sieges and camps become feasible and sustainable. Thus, one of the contributions of this work is to have designed a framework whereby tactical choice, relative to specific weaponry use, helps in identifying and contextualizing the asymmetry in power (or lack thereof) between the incumbent state and the insurgent, consequently allowing for a categorization of a given civil war as conventional, irregular, or symmetrical nonconventional. Note that such tactics can be the object

of future studies on civil war but also interstate wars. The purpose to identify tactics used by warring actors confronting each other militarily would be to categorize inter-state wars as being fought in a way whereby asymmetry in power between the warring actors can be discerned and analyzed. In fact, tactics in a context of inter-state war that opposes (at least) two states or sovereign entities date back to at least the 15th century[121].

Chapter Six departs from conventional frequentist models in order to offer a novel statistical model that has grown increasingly popular within the subfield of political science. Derived from Bayesian analysis, the results of Chapter Six rely upon a change-point analysis whereby it examines the efforts of states to consolidate against civil war regardless of the type of civil war during a specific period in their history. Identifying clear turning points in time, or what is referred to as change-point values, makes inferences possible as far as whether states are moving toward or away from consolidation against civil wars. Consolidation against civil war is a function of a decisive decrease in the frequency of civil wars fought over time. Whenever values post-change point (*mu2*) are greater than values pre-change point (*mu1*), moving away from consolidation against civil war becomes the likely scenario[122]. The results indicate that in a world that has become increasingly civil war prone, especially since the early 1960s, states that have had a higher democratic propensity are less prone to civil wars than states that have adopted autocratic rule.

[121] One can think of tactics portraying indirect attacks such as the *cabalgadas*; aimed at destroying the harvest in Grenada under Islamic rule of the pre-1492 period. The Spanish armadas- of Ferdinand the Catholic- carried out such tactics leading, *inter alia*, to the *Reconquista* of Grenada in 1492 (Braudel 1996). Such tactics may have implied a relative incapability of the Spanish Armadas to directly confront Islamic Grenada; thus the reliance on the aforementioned indirect tactics of attacks. That is to say that the framework of tactics designed in this paper might not be limited to the power dynamics within civil wars alone.

[122] The exact opposite inequality (between mu1 and mu2) demonstrates that states are moving toward consolidation against civil wars.

Although weaker overall, the results regarding the levels of yearly economic growth, suggest that economies, which have experienced a robust and sustained increase in their yearly economic growth levels, have moved toward consolidation against civil wars beginning in the late 1940s. In contrast, states with low levels of economic growth have moved away from consolidation against civil war, especially since the late 1950s. Finally, the strongest results concern the variation in yearly per capita GDP levels. Those results confirm that wealthy states decisively moved toward consolidation against civil war from 1929 onward. Likewise, although overall less decisive in their move toward consolidation were poor states, which have arguably also moved toward consolidation against civil war much later (in the early 1970s). Thus, poor states appear to lag behind wealthy states in their respective efforts to decisively consolidate against civil war by approximately forty years. Overall, the strongest findings relate to the quality of being a wealthy state. The implication for future works on civil war, whether regarding the exposure to civil war or the consolidation against civil war, is that it is important to account for the wealth of nations, whether using per capita GDP or another measure of wealth. Chapter Six modestly paves the way for a new avenue of research design in civil war studies, one where the philosophy of research, through Bayesian modeling, looks at history in order to determine the future, unlike conventional methods whereby the past is asked to be reproduced indefinitely in order to establish a 95% confidence interval. The empirical realism that Bayesian analysis promises is one of the its many merits, consequently providing an exciting new instrument at the disposal of future research in political science, and on civil war.

Limitations

There are limitations within this thesis that need to be addressed. Those limitations are enumerated following the order of the Chapters. Regarding Chapter Four, given that symmetrical

nonconventional civil wars only represent 17 cases, the results that derive from the latter model must remain tentative[123]. When it comes to Chapter Five, the main limitation lies in the unverified assumption that the area of the battlefield and the areas with high civilian inhabitance do not spatially overlap. In fact, if that assumption does not hold, then the results that distinguish between civilian and battle-related deaths would need to be revisited[124]. Further, the covariate estimates for per capita GDP and for Polity IV scores, albeit significant when predicting an overall decrease in the number of battle-related deaths (Model 5.1), infer that there is no lagged posterior effect on the decrease of battle-related deaths. Evidently, this assumption can be put in doubt and future works need to design variables that gauge a certain lagged posterior effect for covariates such as per capita GDP and polity scores when it comes to assessing their real impact on decreasing the degree of battlefield lethality in a civil war context.

Finally, the results of Chapter Six only take into account whether the state in question has had a clear democratic propensity *versus* autocratic leaning throughout its history, whether the state is rich or poor, and whether that state has experienced periods of economic prosperity or recession (or economic stagnation). That is to say that the models did not account for several important control variables, namely the increasing number of states formed between the 1820s and 2007, the time elapsed between state formation and the first civil war, or whether the state itself experienced civil war for the first time or relapsed into civil war (in which case becoming a civil war recidivist) throughout its history. Also, another limitation relates to the choice of change-point models used. In fact, other change-point models, based upon logit or probit functions,

[123] Although rare event logistic regressions were run in order to correct (to an extent) for standard logit estimates.
[124] Although the number of casualties significantly differs between those that succumbed on the battlefield and those outside of the battlefield, which can provide reasonable and preliminary (albeit unverified) support to the assumption that the areas of the battlefield and those outside of the battlefield typically do not spatially overlap.

directly generate probabilities of consolidation against civil war, which may arguably be more efficient than measuring a decisive increase or decline in the frequency of civil wars over time.

Remarks on Prospective Research

The literature on civil war has recently adhered to the logic of disaggregation of civil war into different types; here it is observed as a function of the mode of fighting over the course of a civil war. Whether theoretically or empirically, this disaggregation is warranted, given the variation in the results predicting either the differential risk exposure to each type of civil war, or the differential level of violence unique to each type of civil war. Thus, moving forward, it seems fair to suggest that future quantitative work on civil war that chooses to aggregate all civil wars into one need to offer a convincing theoretical framework to support such an initiative. In a world where the frequency of civil wars is increasing (Dertwinkel 2009), it is crucial for future research to identify and subsequently categorize civil wars as being fought in conventional, irregular, or symmetrical nonconventional mode. Of course, other categories can be theorized, such as civil wars fought for independence (Algeria in the period 1954-1962) or civil wars preceding secession (Bangladesh in 1971). Thus, there is room for future research to associate the war dynamics, which have been the primary focus of this paper, with the political dynamics in the context of civil war.

Appendix

Appendix A: Exposure to Civil War

43 subjects were dropped from the study because of missing data or because they represent micro-sates with less than 500, 0000 inhabitants (The World fact book, CIA 2008). Below is the exhaustive alphabetical enumeration of such observations:

Andorra, Antigua and Barbuda, Bahamas, Barbados, Belize, Bhutan, Bosnia, Brunei, Cape Verde, Comoros, Cyprus, Dominica, East Timor, Equatorial Guinea, Federated States of Micronesia, Fiji, Guinea, Grenada, Guyana, Iceland, Kiribati, Liechtenstein, Maldives, Malta, Marshall Islands Monaco, Nauru, North Vietnam (1945-1976), Oman, Palau, Papua New Guinea, Sao Tomé-et-Principe, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Samoa, San Marino, Seychelles, Serbia, South Sudan, Tonga, Tuvalu, and Vanuatu.

Appendix A.1: States outside of Asia that are neither new (formed post-1964) nor civil war recidivists[125]

Central African Republic, Chad, Colombia, Democratic Republic of the Congo, Republic of the Congo, Haiti, Kenya, Lebanon, Liberia, Sierra Leone, Somalia, Sudan, and Angola.

Appendix A.2: Dealing with Missing Data

Variable				Obs<Missing		
	Obs=Missing	Obs>Missing	Obs< Missing	Unique Values	Min	Max
Incumbent Consolidation	43		7,519	2	0	1
Military	24		7,538	2	0	1

Above is the summary of missing data found in the overall sample. All the other variables have data available. It is important to mention, however, that originally GDP per capita, GDP growth, and the rural population all had missing data. Since the aforementioned variables had missing observations when first entering the panel (or year 1946), interpolation of data was made between the first year in which data existed and the year 1946. The most interpolation made was in the case of the rural population variable, which replaced missing values in the entry year by

[125] According to the coding of civil war that the Correlates of War provides.

available values in year _n+4. Although the rural population variable, similarly to per capita GDP or GDP growth, experiences yearly within variation, the assumption here is that interpolating made not only regeneration of (otherwise) missing data possible, but it also remained genuinely representative of the clear visible pattern in the variation of the aforementioned variables.

Appendix A.3: Assessing Proportionality in Hazards Estimates

Below are the statistical tests of proportionality that helped to detect violations in the proportionality on hazards estimates, which is integral to the Cox parameterization assumption[126].

Table A.4: All Civil Wars-Test of Proportional Hazards Assumption

	rho	chi2	df	Prob>chi2
Incumbent Consolidation	-0.11917	2.79	1	0.0950
Military as Executive	0.11593	3.27	1	0.0706
Per Capita GDP	-0.13524	20.25	1	0.0000
Yearly GDP Growth	0.14084	22.63	1	0.0000
Polity	-0.05091	0.81	1	0.3677
Ethnic Frac.	0.33012	39.84	1	0.0000
Religious Frac.	-0.26798	26.53	1	0.0000
Polity* High Ethnic Frac.	-0.10532	4.04	1	0.0446
Polity* High Religious Frac.	0.17756	11.87	1	0.0006
Rough Terrain	0.13813	4.89	1	0.0270
Rural Population	-0.13912	21.44	1	0.0000
New State (formed Post-1964)	0.18229	23.2	1	0.0000
Civil War Recidivist	-0.02245	0.2	1	0.6578
Sub-Saharan Africa	-0.21764	20.84	1	0.0000
MENA	-0.25127	30.42	1	0.0000
Latin America	-0.3078	39.38	1	0.0000
Asia	-0.26222	41.35	1	0.0000
global test		82.78	17	0.0000

[126] Interaction terms were generated between the log units of time and the covariate of which the chi-squared value was significant at least at the .05 level. The *estat phtest* command in STATA was used for the first set of regressions (all civil wars conflated together or model 1 in table 4.6). The option *tvc* (or time-varying covariates) was used in STATA in order to detect the violation of covariates (estimated through competing risk regressions) of the proportional hazards assumption in the following tables below (or models 2 and 3 in table 4.6). Note also that the results of the regressions run on time-varying covariates (using the *tvc* option) did not converge in model 4, or the model where it is question of symmetrical nonconventional warfare. Therefore, we detect any violation of the proportionality of hazards assumption in the symmetrical nonconventional warfare model (or model 4) using the *estat phtest* command in STATA.

Table A.5: Conventional Warfare-Test of Proportional Hazards Assumption

tvc	Coef.	Robust St. Error	z	P>| z |
Incumbent Consolidation	0.0057227	0.0540158	0.11	0.916
Military as Executive	-0.0114327	0.0239193	-0.48	0.633
Per Capita GDP	-0.0406742	0.0133762	-3.04	0.002
Yearly GDP Growth	0.0261122	0.0146984	1.78	0.076
Ethnic Frac.	0.1263136	0.0582831	2.17	0.030
Religious Frac.	-0.0359086	0.0502904	-0.71	0.475
Polity	0.0026971	0.0043445	0.62	0.535
Polity* High Ethnic Frac.	-0.0019181	0.0079884	-0.24	0.810
Polity* High Religious Frac.	-0.0053339	0.0080086	-0.67	0.505
Rough Terrain	0.0026095	0.0083371	0.31	0.754
Rural Population	-0.0408313	0.0167168	-2.44	0.015
New State (formed Post-1964)	0.0250004	0.0203759	1.23	0.220
Civil War Recidivist (since 1900)	0.0284043	0.0299686	0.95	0.343
Sub-Sharan Africa	-0.0616986	0.0410485	-1.50	0.133
MENA	-0.0844139	0.0364351	-2.32	0.021
Latin America	-0.3055311	0.0830734	-3.68	0.000
Asia	-0.0575364	0.0456088	-1.26	0.207

Note: 95% Credible Intervals were intentionally removed in order to preserve the graphical clarity.

Table A.6: Irregular Warfare- Test of Proportional Hazards Assumption

tvc	Coef.	Robust St. Error	z	P>| z |
Incumbent Consolidation	0.0031275	0.0241783	0.13	0.8970
Military as Executive	-0.008854	0.0309086	-0.29	0.7750
Per Capita GDP	0.0363575	0.0285261	1.27	0.2020
Yearly GDP Growth	-0.0002594	0.0186299	-0.01	0.9890
Ethnic Frac.	0.0060661	0.0351075	0.17	0.8630
Religious Frac.	-0.0909018	0.0526098	-1.73	0.0840
Polity	0.002101	0.0039152	0.54	0.5920
Polity* High Ethnic Frac.	-0.0047985	0.0063273	-0.76	0.4480
Polity* High Religious Frac.	0.0063677	0.0098965	0.64	0.5200
Rough Terrain	-0.0038411	0.0076121	-0.5	0.6140
Rural Population	0.0090418	0.0172528	0.52	0.6000
New State (formed Post-1964)	0.0254438	0.0341651	0.74	0.4560
Civil War Recidivist (since 1900)	0.0044131	0.0285311	0.15	0.8770
Sub-Saharan Africa	0.0596375	0.0875429	0.68	0.4960
MENA	0.0013155	0.0878746	0.01	0.9880
Latin America	-0.0202261	0.0879392	-0.23	0.8180
Asia	-0.014154	0.0876763	-0.16	0.8720

Note: 95% Credible Intervals were intentionally removed in order to preserve the graphical clarity.

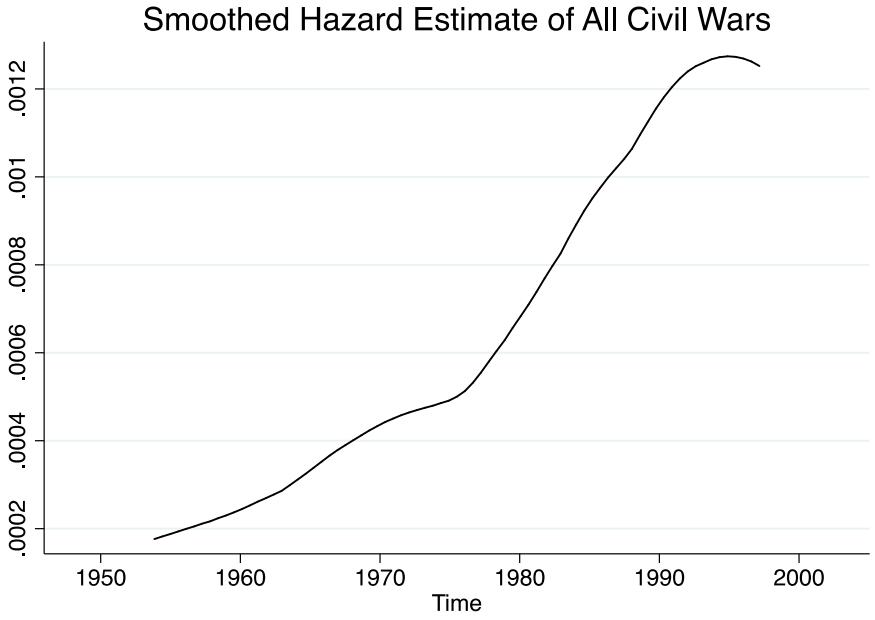
Table A.7: Symmetrical Nonconventional Warfare- Test of Proportional Hazards Assumption

	rho	chi2	df	Prob>chi2
Incumbent Consolidation	0.02098	0.01	1	0.9310
Military as Executive	-0.12605	0.42	1	0.5194
Per Capita GDP	0.27577	9.99	1	0.0016
Yearly GDP Growth	-0.31591	11.82	1	0.0006
Ethnic Frac.	0.09046	1.18	1	0.2778
Religious Frac.	-0.11694	0.68	1	0.4111
Polity	0.07599	1.16	1	0.2824
Polity* High Ethnic Frac.	0.07941	0.61	1	0.4366
Polity* High Religious Frac.	-0.06405	0.66	1	0.4167
Rough Terrain	0.08277	0.11	1	0.7353
Rural Population	0.20059	6.75	1	0.0094
Sub-Saharan Africa	-0.1792	2.15	1	0.1427
MENA	-0.09364	0.75	1	0.3869
Latin America	0.20934	2.66	1	0.1028
global test		25.58	14	0.0293

Appendix A.8: Graphical Outputs

Below is the graphical output of the hazards, survival, and failure functions, first considering civil wars as a whole, and then disaggregating them into the three different types.

Figure A.9. *Smoothed Hazard Estimate of All Civil Wars*



As one can see from the figure A.9, the hazard estimates, when combining the risk of all three types of civil wars, is almost linear. Thus, as time increases by one year, the hazards are expected to increase by approximately one point. After 1991, however, or the end of the Cold War, the function starts resembling what in economics is known as a diminishing-returns function. One observation that can be made is that the end of the Cold War 'pacified' the world, albeit timidly. Also, the effect of the Cold War in shaping the dynamics of internal conflict, torn between the 'liberal' world and the 'egalitarian' mantra, greatly captures the increase in civil war hazards between 1946 and 1991.

Figure A.10. *Smoothed Hazard Estimate per type of Civil War*

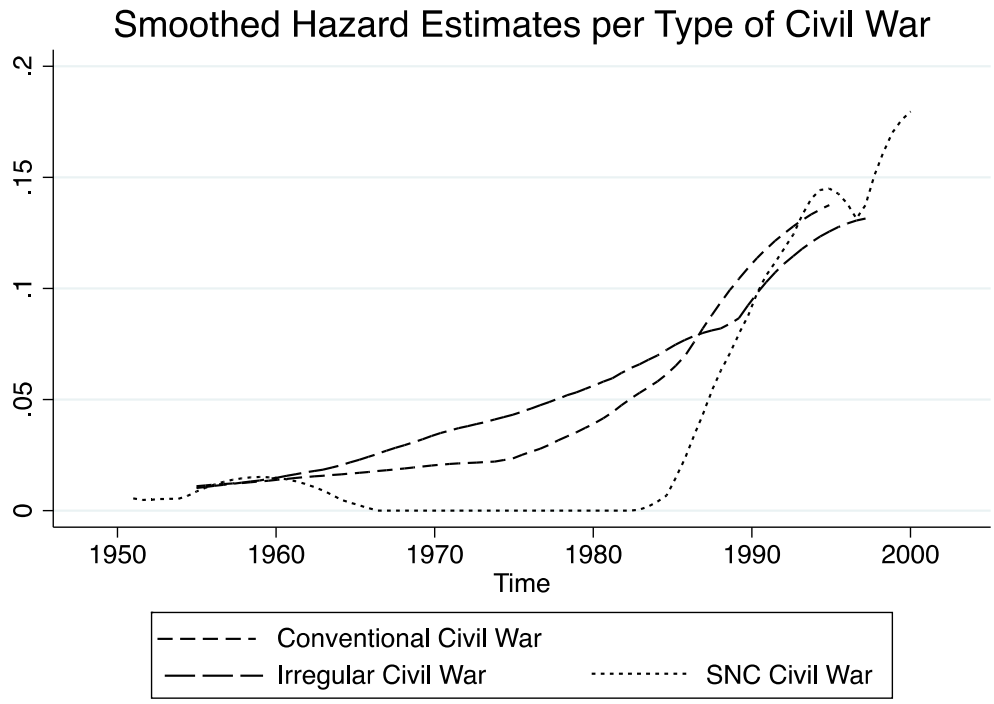


Figure A.10 disaggregates the hazards into three, those associated with conventional, irregular, and symmetrical nonconventional civil wars. Between the year 1965 and 1985, the hazards associated with irregular warfare were significantly greater than those of conventional and symmetrical nonconventional civil wars. In fact, the hazards of irregular warfare were almost

100% greater than those of conventional conflict (0.05 *versus* 0.025 for the former and the latter, respectively). Another interesting observation is that symmetrical nonconventional civil wars only appear (decisively)-through their hazards- after 1985. This implies that symmetrical nonconventional conflict is a relatively new way of waging civil wars, as opposed to the 'traditional' irregular and conventional dynamics of warfare.

Figure A.11. *Survival Estimates per type of Civil War*

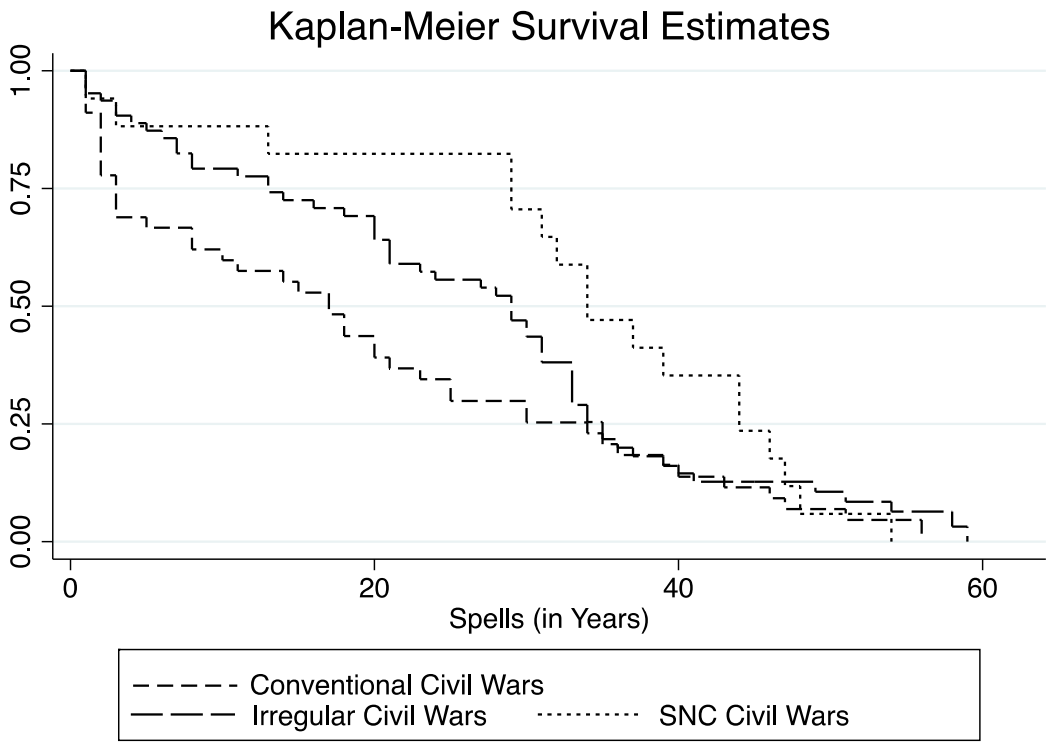


Figure A.11 assesses the extent to which states survive, or do not experience civil wars, per year and per type of civil war. Throughout the years, it seems that conventional civil wars are the most susceptible to materialize, since over a span of 20 years, the survival estimates of conventional civil wars is almost half and one-third those of irregular and symmetrical nonconventional wars, respectively.

Appendix A.12: Robustness Check of the Results in Table 4.6

Rare-Event Logistic Regressions on the Probabilities of the Occurrence of Conventional, Irregular, and Symmetrical Nonconventional Civil Wars

	Conventional	**Irregular**	**SNC**
Incumbent Consolidation	0.226	0.856	0.344
	(0.58)	(0.52)	(1.11)
Military as Executive	0.364	0.781**	0.642
	(0.31)	(0.27)	(0.55)
Per Capita GDP	-0.022	-0.759**	-0.882
	(0.68)	(0.24)	(0.57)
Yearly GDP Growth	-0.081	0.038	0.315
	(0.47)	(0.19)	(0.44)
Ethnic Frac.	0.97	0.898	0.892
	(0.74)	(0.53)	(1.6)
Religious Frac.	1.45	-0.523	2.974*
	(0.9)	(0.77)	(1.48)
Polity	0.024	0.026	-0.094
	(0.07)	(0.05)	(0.15)
Polity* High Ethnic Frac.	-0.142	-0.021	0.229*
	(0.1)	(0.08)	(0.11)
Polity* High Religious Frac.	0.171	-0.105	-0.169
	(0.15)	(0.12)	(0.22)
Rough Terrain	0.345**	0.232	0.159
	(0.13)	(0.13)	(0.2)
Rural Population	0.029	0.283	-0.692
	(0.46)	(0.2)	(0.55)
New State (formed Post-1964)[127]	0.983*	-0.008	
	(0.43)	(0.49)	
Civil War Recidivist (since 1900)	0.23	-0.19	
	(0.65)	(0.41)	
Sub-Saharan Africa	0.117	0.696	1.425
	(0.75)	(0.9)	(1.67)
MENA	0.617	1.506	1.793
	(0.64)	(0.85)	(1.38)
Latin America	-0.127	1.229	1.373
	(0.85)	(0.87)	(1.85)
Asia	0.196	0.876	
	(0.78)	(0.83)	

Standard errors are in parentheses. P-values: * p<0.05, ** p<0.01, *** p<0.001. Note: SNC: Symmetrical Nonconventional. MENA: Middle East and North Africa.

[127] Note that the covariates "New State", "Civil War Recidivist", and "Asia" were dropped from the model where it is question of symmetrical nonconventional civil wars since they over-predict the negligible risk of symmetrical nonconventional civil wars in Asian states, in, new states, and in those whereby civil war has been recurring since the year 1900 (recidivists).

The above table suggests that the findings presented in Table 4.6 are more or less consistent with those presented above. Given that the event under study, civil war onset, is a rare event[128], rare event logistic regressions (estimated in the above table) were run in order to avoid underestimating the probabilities of such events (King *et al.* 1999a; King *et al.* 1999b; King *et al.* 2001).

[128] Note that they are only 126 instances of civil war onset out of a total of 7517 observations.

Appendix B: The Level of Violence in Civil War

Table B.1: Pattern of Deaths (KOSVED dataset)

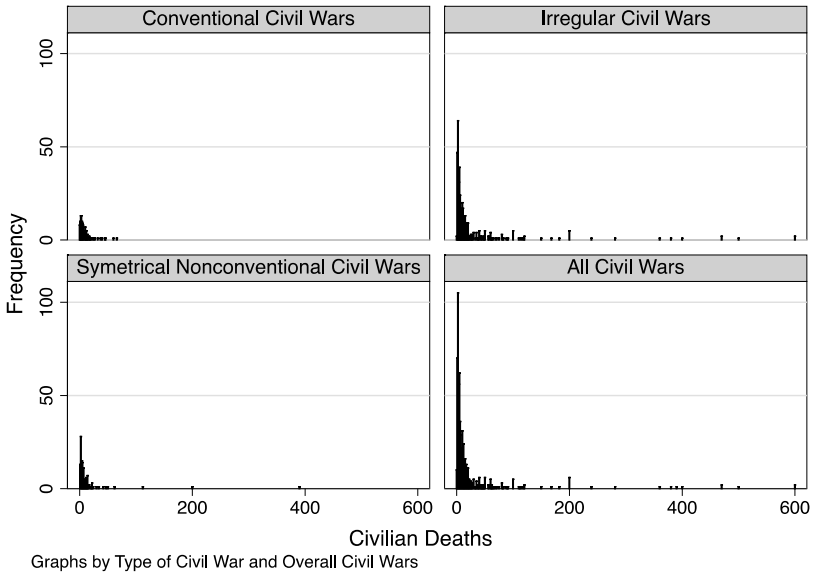
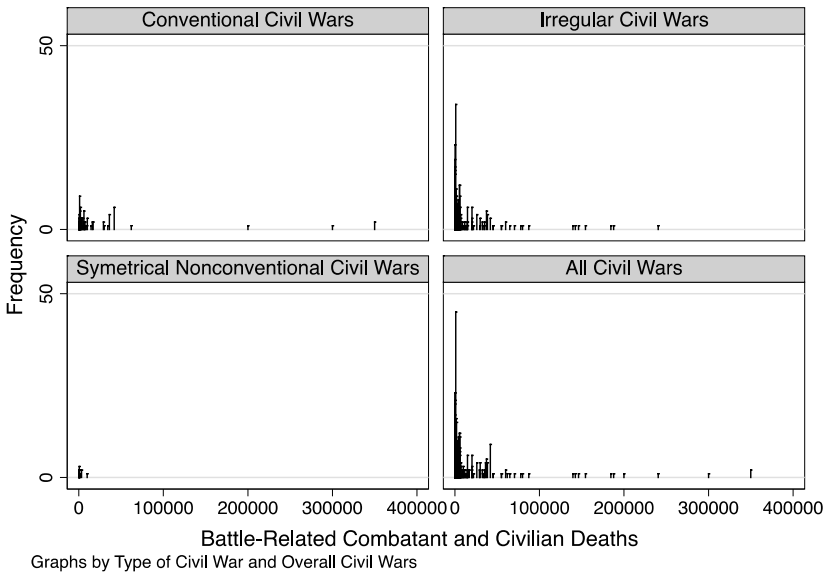


Table B.2: Pattern of Deaths (PRIO100 dataset)



The level of overall violence committed strictly against civilians (Table B.1) and against both civilians and combatants (Table B.2) is reflected in the two graphs above. The values of deaths in the first graph range from 0 to 600, and from 100 to 350000 deaths in the second graph. Note that the number of total casualties is graphed in the bottom-right corner in both outputs.

Appendix B.3: List of Civil Wars included in KOSVED Dataset

Civil War	**Start**	**End**
Angola	1994	2003
Azerbaijan	1990	1996
Bosnia-Herzegovina	1990	1995
Chad	2000	2004
Chechnya	1993	2006
Colombia	1999	2003
Côte d'Ivoire	2000	2006
Croatia	1990	1996
Democratic Republic of the Congo	1995	2002
Liberia	1989	1994
Liberia	2001	2005
Macedonia	1998	2001
Niger-Eastern	1994	1999
Niger- Air and Azwad	1990	1999
Republic of the Congo	1991	2005
Serbia	1998	2001
Slovenia	1991	1991
Sudan-Darfur	2001	2008
Uganda	1979	2002

From the list above we count 19 instances of civil wars included in the KOSVED dataset, of which 17 are unique cases (as opposed to the case of Liberia that is included twice in order to temporally match the first and second Liberian civil war, respectively). From this study were excluded the cases of Colombia (1999-2003), Niger-Eastern (1994-199), and Niger- Air and Azwad (1990-1999) for lack of reliable and complete data. All the remaining cases are included in the study.

Appendix B.4: Explaining the Parameters in the Probabilities of Civil War types

Below are the likelihoods of civil war type as a function of both the actor and the weaponry.

Figure B.5. Probability that a Civil War is Fought Conventionally

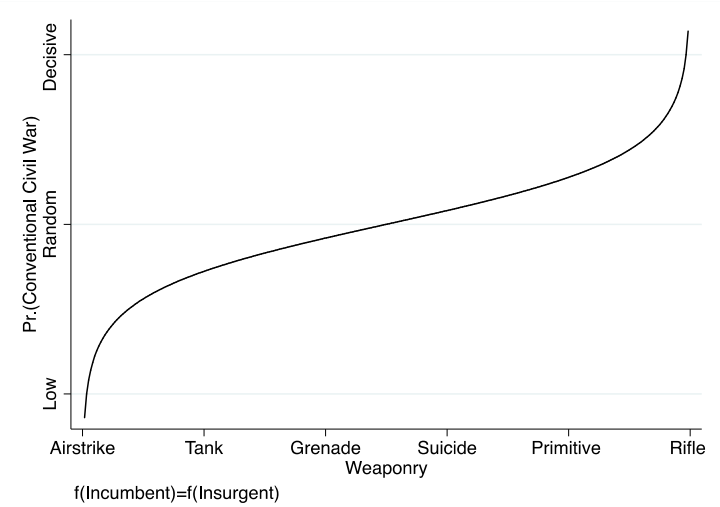


Figure B.6. Probability that a Civil War is Fought Symmetrically and Unconventionally

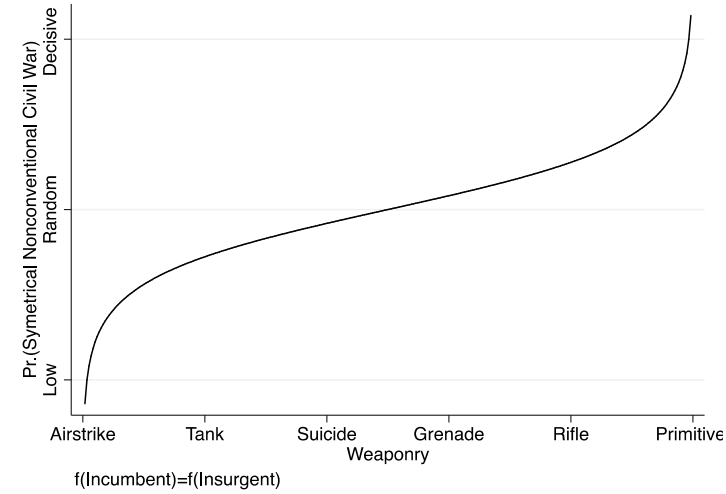


Figure B.7. Probability that a Civil War is fought Irregularly, Given the Function of the Incumbent State

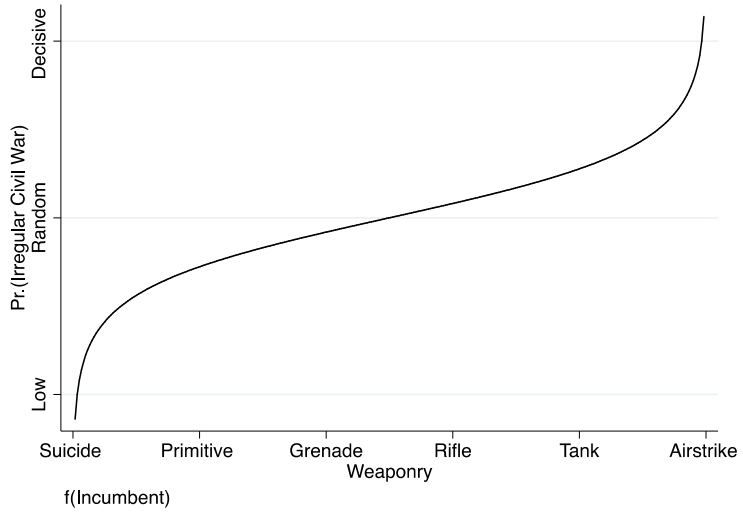
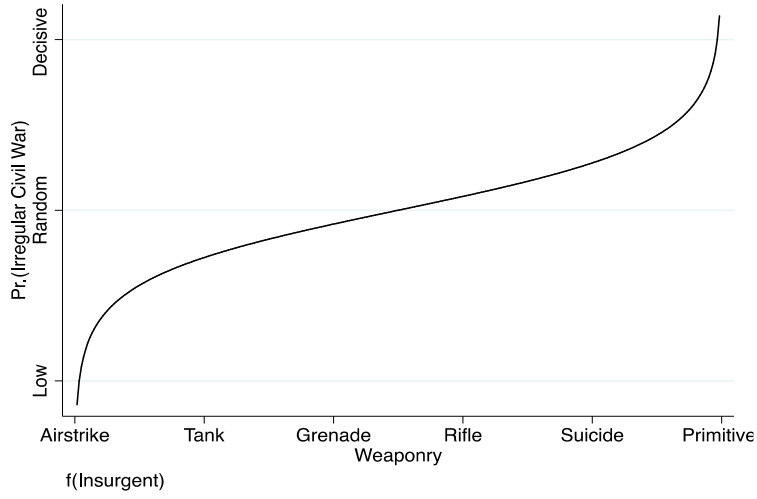


Figure B.8. Probability that a Civil War is Fought Irregularly, Given the Function of the Insurgent



Below is the algebraic function of the probability that a civil war is fought in conventional, symmetrical nonconventional, or irregular mode. Note that the below logistic function is graphically translated above, through a four way disaggregation into the function *f(x)* of the incumbent and that of the insurgent. Also, note that since conventional and symmetrical nonconventional warfare both imply power parity between the incumbent state and the insurgent, they both share the same function and probabilities (Figures B.5 and B.6, respectively).

Figure B.8: Algebraic Function of the Probability that a Type of Civil War is Fought:

$$\pi_t^{actor} \rightarrow (P)|(k): f(x) = \frac{1}{1 + e^{-x}}$$

The equation is expressed whereby the probability π that a civil war is fought in conventional, symmetrical nonconventional, or irregular mode for the specific warring *actor* at time *t* is the equivalent to the probability P given the weapon used *k*, which is modeled *via* the inverse of the logistic function. The final value represents a probability, thus a value between 0 and 1.

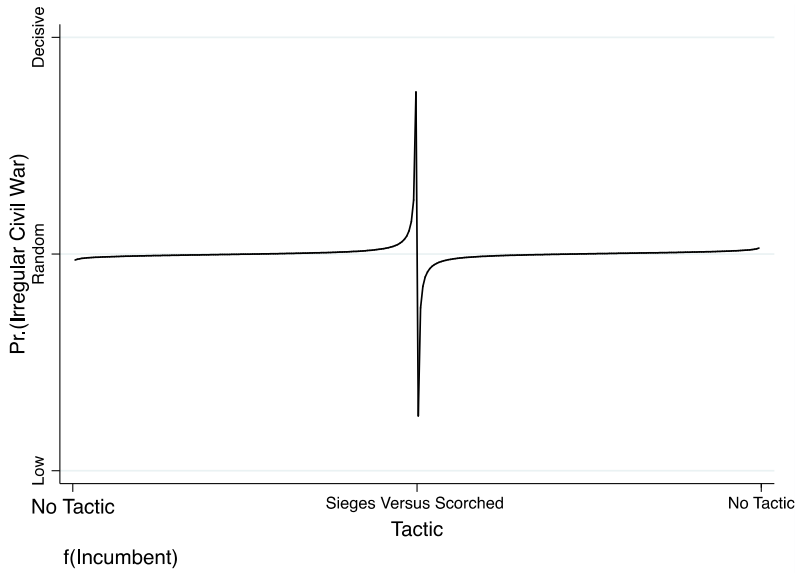
Appendix B.9 Identification and Definition of Tactics at the Disposal of Warring Actors[129]

Tactic	**Definition**
Looting	Indiscriminate stealing of goods by force.
Scorched	Wide-scale burning of buildings, destruction of infrastructure such as roads, power lines, and water treatment systems, used to make an area uninhabitable.
Starvation	Tactics related to starvation include the deliberate withholding of food aid, deliberate destruction of crops, attacks on food-aid convoys, etcetera.
Shields	Using human shields involves moving non-combatants onto battlefield as protection of the armed group, hiding in hospitals, hiding among crowds, etcetera.
Assassination	Assassinations are discrete events of killing a leader of one of the involved organized groups.
Torture	Torture is a deliberate physical act to inflict severe suffering or pain on the human body.
Hostage	Taking hostages is the forceful abduction (of children or adults) until specific demands are met or money is handed over.
Kidnapping	Kidnapping is the forceful abduction (of children or adults) for the use as fighters.
Deport	Deportation is forced banishment of civilians from a certain area.
Disappear	Non-combatants disappear without evidence of death or abduction. This will also occur when there are reports of additional victims who cannot be accounted for among the known dead.
Camps	A guarded enclosure for the detention or imprisonment of political prisoners, prisoners or war, aliens, refugees.
Sieges	Situations where the freedom of movement of non-combatants is restricted to a limited geographical area, but where the targeted individuals and groups were not forcefully transported to these locations. Usually the inhabitants maintain internal control of the area to which they are restricted because of the siege.

[129] Directly borrowed from the codebook attached to the KOSVED dataset (Bussman and Schneider 2012).

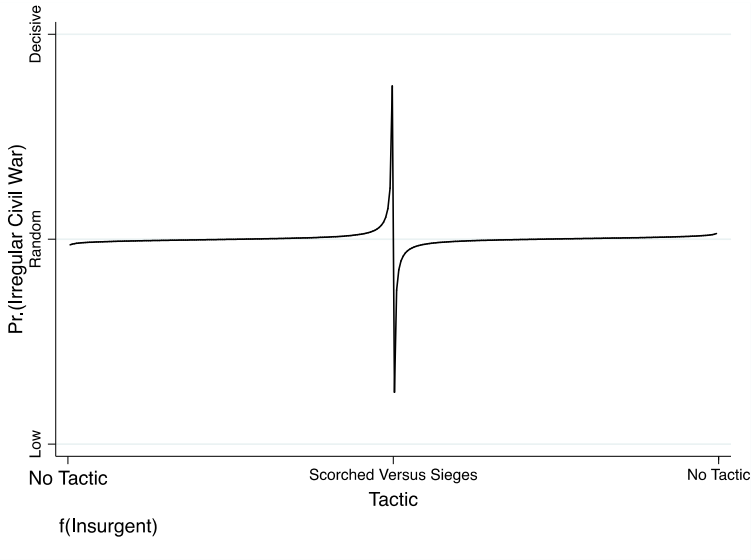
Appendix B.10: The Probability that a Civil War is Fought Irregularly Given the Actor and the Tactic

Figure B.11. Probability that a Civil War is Fought Irregularly Given the Function of the Actor (Incumbent) and the Tactic[130]



[130] It is suggested to read the scale on the x-axis as going from left to right (in the area within the two left quadrants) and then from right to left (in the area of the two right quadrants). This reading allows for an explanation of the increase in the probability (going from the left to the middle part of the graph) and a subsequent decrease in the latter (going from the right to the middle part of the graph) even though the scale on the x-axis, in reality, has a univocal direction from left to right.

Figures B.12. Probability that a Civil War is Fought Irregularly Given the Function of the Actor (Insurgent) and the Tactic



The above two figures assume that both the incumbent state and the insurgent are using similar weaponry. What decisively codes the civil war as irregular becomes a function of the tactics used. In fact, the determinant of irregular civil war (in the above illustration) is when the incumbent besieges an area, or reciprocally when the insurgent, forced to flee, has recourse to scorched earth tactics[131]. Whenever the insurgent besieges an area, it is argued that the probability of fighting an irregular civil war is substantially reduced, as the balance of power between the incumbent and the insurgent is restored. The type of war becomes either conventional or symmetrical nonconventional, depending on the type of armaments the rival actors deploy (heavy or light weaponry).

[131] Note that the incumbent siege propels the probability of irregular civil war from random to decisive, equally, whenever the incumbent state has recourse to scorched earth tactics, it is implied that the power asymmetry between the latter and the insurgent is reduced. As a result, the probability of fighting an irregular civil war substantially decreases. Other tactics can interchangeably explain the same phenomenon: torture versus kidnapping, target assassination versus human shields, and so forth. The two tactics in the output were randomly chosen. Only those two tactics were considered in order to preserve the clarity of the graphical output and to avoid reproducing multiple graphs that would illustrate the same exact logic.

Appendix C: Consolidation Against Civil War

Appendix C.1: Missing Cases

41 subjects were dropped from the study because of missing data or because they represent micro-sates with less than 500, 0000 inhabitants (The World fact book, CIA 2008). Below is the exhaustive alphabetical enumeration of such observations:

Andorra, Antigua and Barbuda, Bahamas, Barbados, Belize, Bhutan, Bosnia, Brunei, Cape Verde, Comoros, Cyprus, Dominica, East Timor, Equatorial Guinea, Federated States of Micronesia, Fiji, Guinea, Grenada, Guyana, Iceland, Kiribati, Liechtenstein, Maldives, Malta, Marshall Islands Monaco, Nauru, Oman, Palau, Papua New Guinea, Sao Tomé-et-Principe, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Samoa, San Marino, Seychelles, Serbia, Tonga, Tuvalu, and Vanuatu.

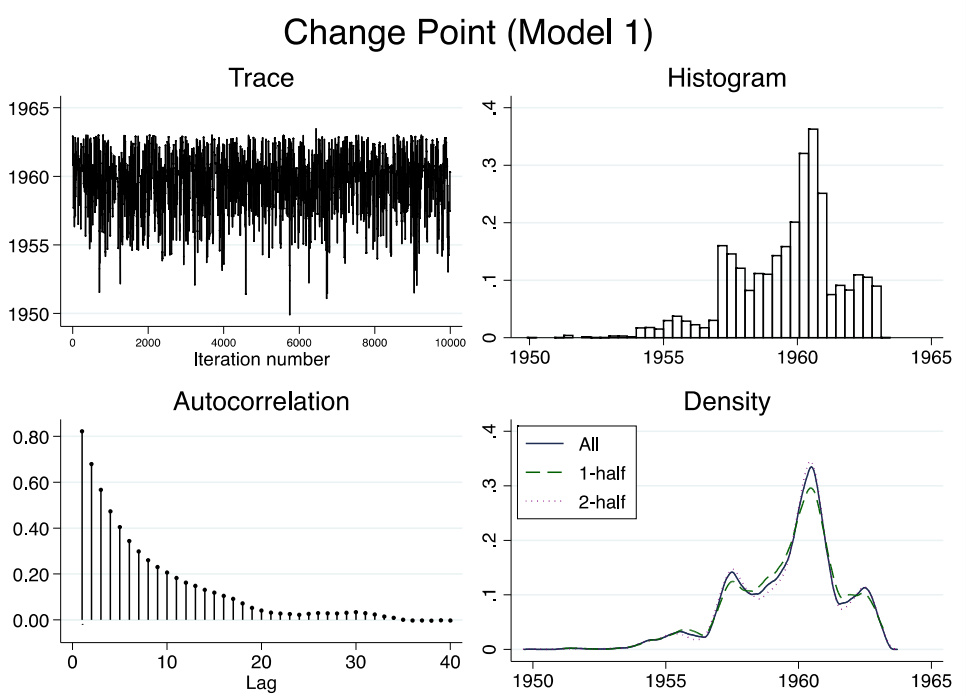
Appendix C.2: Change-Point Diagnostics

In the following outputs, the two graphs on the left-hand side and the one in the bottom-right corner provide three diagnostics, trace, autocorrelation and density, to the histogram of civil war count, which is always found in the top-right corner. Note that the legend in the density plot describes the overall values of the density-labeled as "All"- the values that mu1 can have- labeled as "1-half"- and those that mu2 can have-labeled as "2-half"[132]. Also note that for purposes of graphical clarity, the temporal range is the same on the x-axis, which goes from 1820 to 2007. The models that were graphed dismiss episodes of no substantial change in the frequency of civil war that occurred before and after the cp value. Consequently, the graphical output focuses on capturing the specific point in time within which the cp value was computed. Evidently, each cp value for each set of models is different, which translates into different start and end years on the x-axis throughout every one of the seven diagnostics drawn. Trace refers to the notion of discerning whether one unique time value is essentially driving or influencing each iteration run until convergence is reached. All seven models show that trace is not problematic, since they are no

[132] Also note that the legend in model five was purposely removed as it partially overlapped with the graph.

clear time values that influence the number of iterations to converge at a concentrated region of years[133]. Autocorrelation looks at time-dependency, or more precisely assesses whether a past value is determining current distribution of data points. Overall, autocorrelation is either zero (models 1 and 3) or around 20% after 40 lags, which is not indicative of high time-dependency in the data. Moreover, the values of mu1 and mu2, graphed in the density plot should ideally match or spatially overlap. This is almost the case for all seven models except for the results generated in Table 6.5 (low per capita GDP). Given that the credible intervals of mu1 and mu2 are by far the most disparate or the widest out of the seven models, the density plot in model 5 shows a relative mismatch in the values of mu1 and mu2 plotted across time. Below are the diagnostics per model.

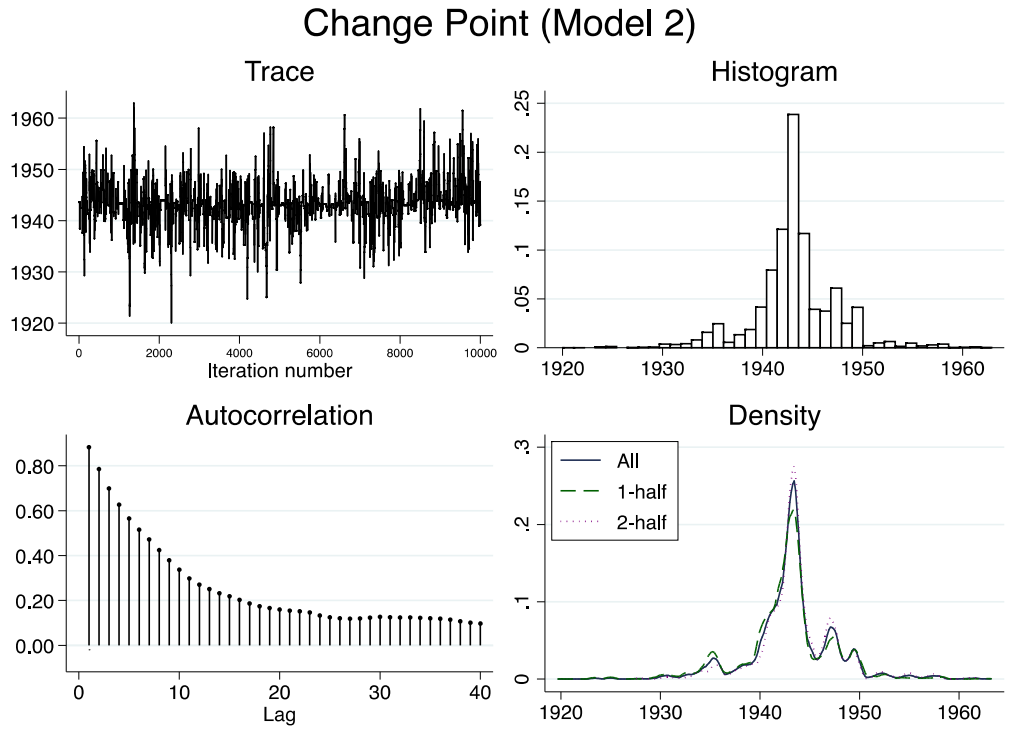
Figure C.3: Change-point diagnostics for aggregate cases (See Table 6.1)



[133] In other words, the region of the trace plot follows a quasi-monotonous horizontal linear form, which is indicative of an unbiased iterative process that is not conditioned or influenced by a specific year or range of years.

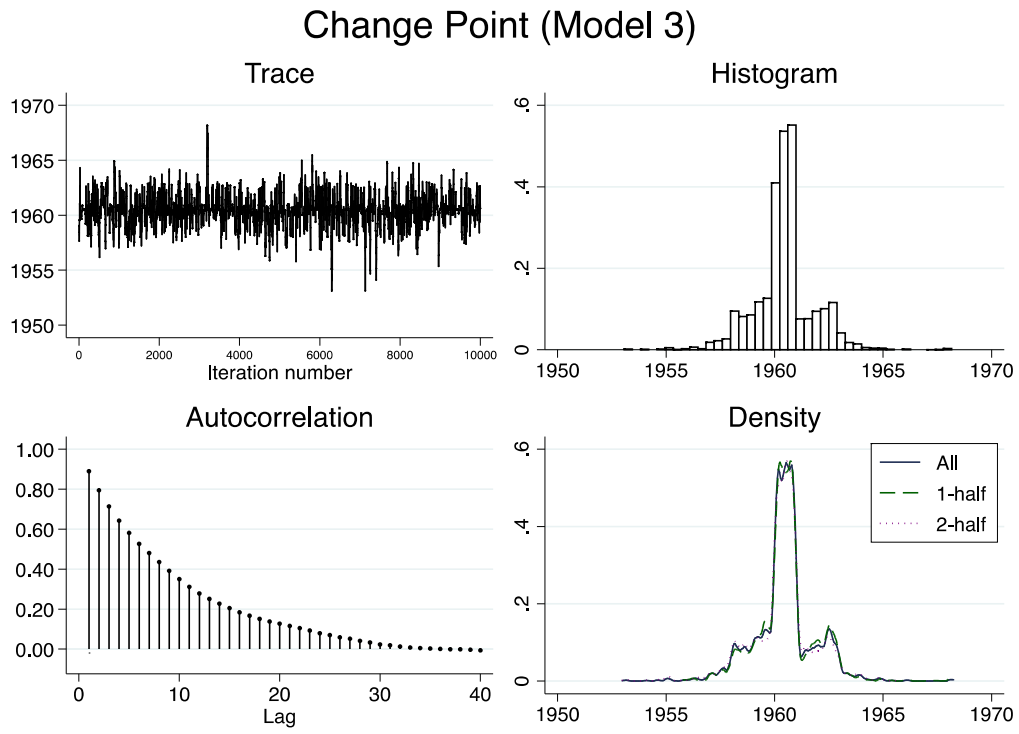
Note that figure O.1 features three visible peaks in the frequency of civil war, at an aggregated level regarding all states between 1820 and 2007. Out of all three peaks, the most pronounced is in 1959-1960. The change point value is 1959. The conclusion made and mentioned earlier is that the world, since 1959-1960, has become more civil war-prone as the value of mu2 is greater than the one of mu1.

Figure C.4: Change-point diagnostics for states with high democratic propensities (See Table 6.2)



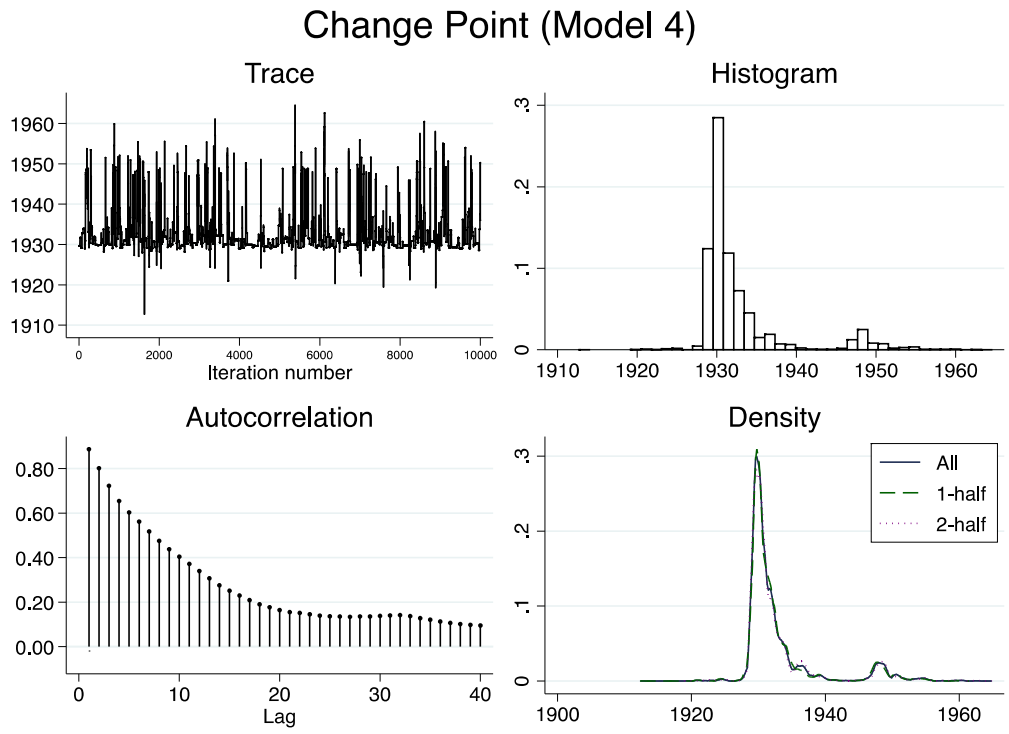
In figure C.3 above, one can see that the number of civil wars fought noticeably peaks around 1943 in states that have more often than not been democratic. However, interestingly, relative to Figure C.2, the civil wars that were fought in the early 1960s appear to not have included states with high democratic propensity. However, the results of Table 6.2 confirm that the democratic quality of nations does not contribute to their respective efforts to consolidate against civil wars, as the value of mu1 is smaller than that of mu2.

Figure C.5: Change-point diagnostics for states with high autocratic propensities (See Table 6.3)



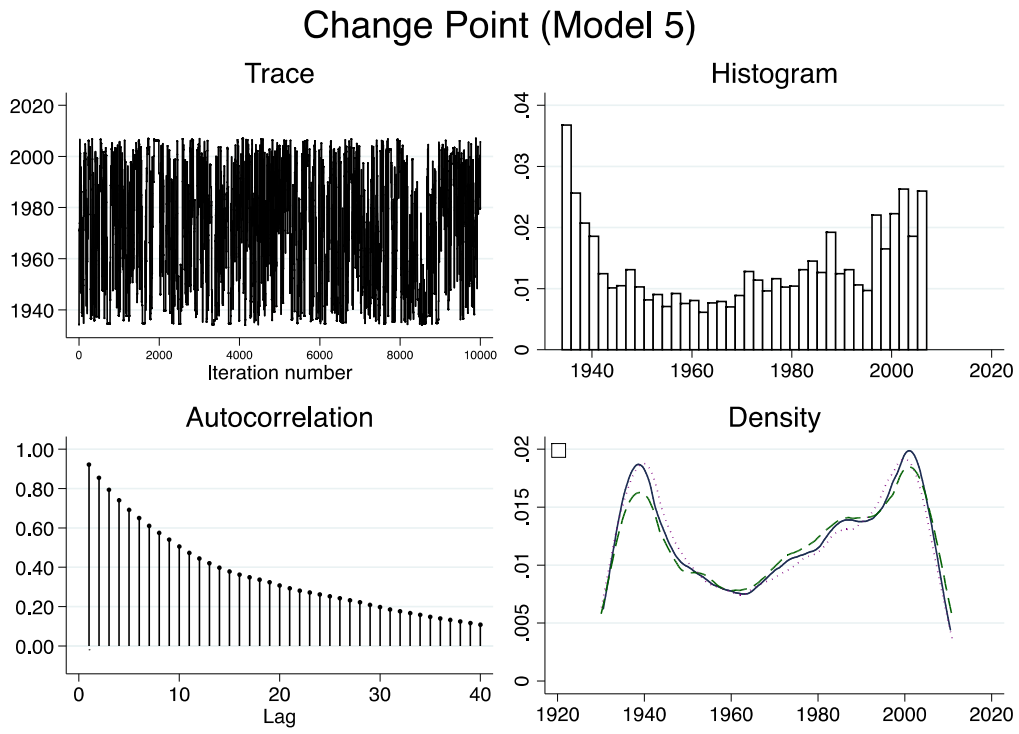
Conversely, looking at Figure C.2, one can deduce that the civil wars of the early1960s were fought in states with low democratic propensity, or ones with a high autocratic leaning. Likewise, the results are equally unambiguous, in that they demonstrate that not being democratic only going to increase the odds of undergoing civil war, especially since the early 1960s onward.

Figure C.6. Change-point diagnostics for states with high per capita GDP levels (See Table 6.4)



The results in Figure C.6 can arguably be considered the most convincing. Except from a minor bump the late 1940s, states that have enjoyed high per capita GDP levels have decisively moved toward consolidation since the early 1930s onward. Note also that those same states appear to have been immune to the overarching wave of civil wars that took shape in the early 1960s. This observation provides another piece of evidence to support the theoretical expectation; namely that the wealth of nations greatly encourages them to consolidate against civil wars.

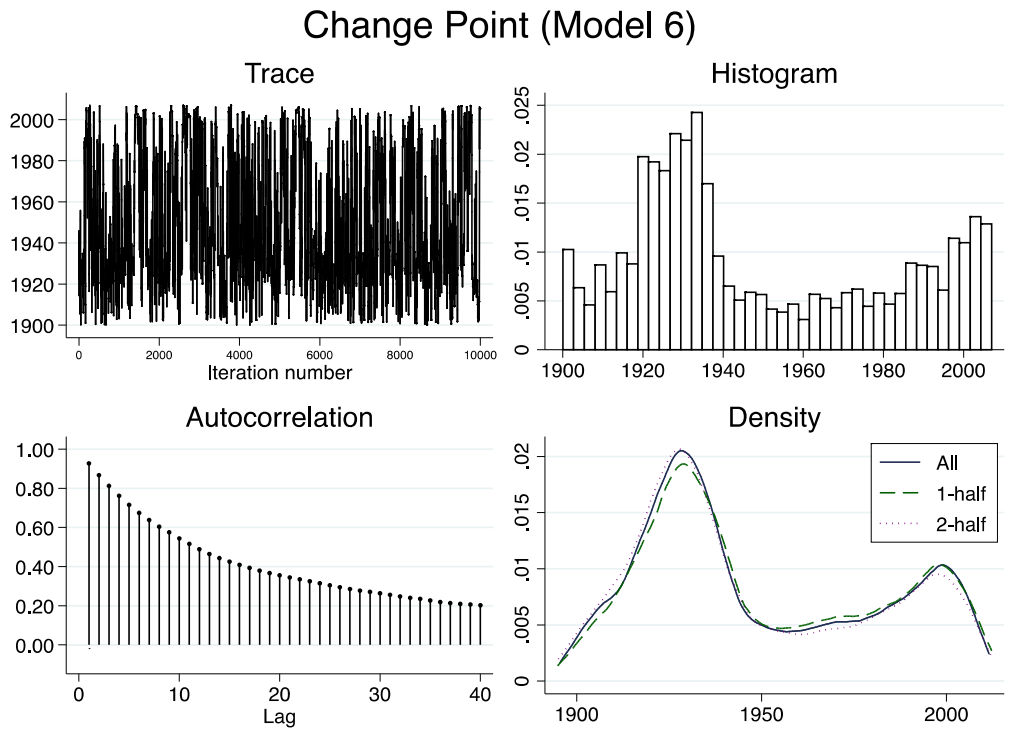
Figure C.7: Change-point diagnostics for states with low per capita GDP levels (See Table 6.5)



On the other hand, the results of the cp value in low-income states, which is year 1971, provide ambiguous interpretations as to the direction of those states in their respective efforts to move toward consolidation against civil war. In fact, the decade 1940s witnesses an overall decrease in civil war count in low-income states, the decades 1950s and 1960s hint to a stagnation in the count of civil wars. Starting in 1971, the number of civil war counts starts decisively increasing. This observation, itself derived from the results run, helps to confirm hypothesis eleven, namely that low-income states fail to consolidation or even fail to move toward consolidation against civil war[134].

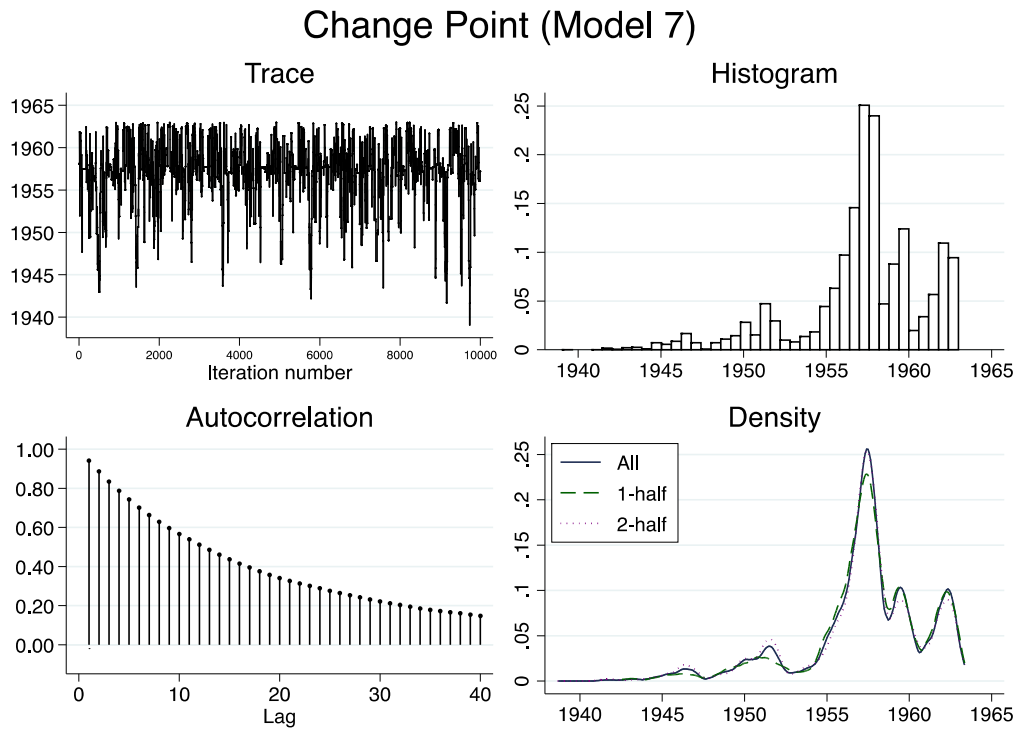
[134] Also given that the ratio {mu1/mu2} is over 1, the trend is thus indicative of an overall rise in the number of civil wars fought since the early 1970s and in states with low levels of per capita GDP.

Figure C.8: Change-point diagnostics for states with high levels of economic growth (See Table 6.6)



The results regarding states that experience high levels of economic growth hint to an overall increase in the number of civil wars starting in the beginning of the 20th century. A decisive decrease in that number was noted in 1948 (the cp value) onward. Before stagnating, that number appears to have increased in the late 1980s. Also, given that the ration {mu1/mu2} is over 1, one can say with confidence that economies experiencing a robust and sustainably high economic growth levels do not necessarily move toward consolidation against civil war, which puts the first part of hypothesis twelve in doubt.

Figure C.9: Change-point diagnostics for states with low levels of economic growth (See Model 6.7)



Finally, because of relative volatility in the pattern of variation in the number of civil wars fought in states experiencing low levels of economic growth, the second part of hypothesis twelve is confirmed. Put otherwise, states that face low levels of economic growth do not move toward consolidation, but rather further away from it. In fact, not only do states will low economic growth experience an increase of civil wars by factor of almost 11 before and after 1957 (the cp value), but the two subsequent less pronounced peaks in 1959 and 1963 suggest that states with stressed levels of economic growth are clearly more exposed to civil war as time passes, at least since the year 1957.

Appendix C.10 Interval Hypothesis Testing: Sensitivity Analysis

The purpose of the following diagnostics is to identify which years, relative to others, have been most prevalent in determining the posterior likelihood that the change-point value will fall within a given range or interval of years. Since the respective change-point values are at the heart of the analysis in Chapter 6, it is useful to discern how likely the change point value is correctly specified in the models. The following diagnostics allow for such discernment. Note that the threshold of accepted probability that the change-point value falls within a specific interval of years is equal to or greater than 0.95. Thus, the higher the probability, the more assertive becomes the claim that states have experienced a significant change in pattern before and after the given change-point value.

Appendix C.11: Aggregate cases of Civil Wars Fought

1) Interval tests MCMC sample size = 10,000

Prob1: 1955 < {cp} < 1962

	Mean	Std. Dev.	MCSE
Prob1	.8429	0.36391	.009872

2) Interval tests MCMC sample size = 10,000

Prob1: 1955 < {cp} < 1963

	Mean	Std. Dev.	MCSE
Prob1	.9757	0.15399	.003298

In the first table above, one can see that the mean probability that the change-point value falls within the range [1955; 1962] is 0.8429. On the other hand, accounting for the year 1963 (in table 2) increases the probability that the true change-point value occurred somewhere between 1955 and 1963 to 0.9757. Thus, the year 1963 has decisively made states more civil war-prone, relative to before that year.

Appendix C.12: History of Democratic Propensity

1) Interval tests MCMC sample size = 10,000

Prob1: 1934 < {cp} < 1951

	Mean	Std. Dev.	MCSE
Prob1	.9422	0.23338	.0086601

2) Interval tests MCMC sample size = 10,000

Prob1: 1933 < {cp} < 1951

	Mean	Std. Dev.	MCSE
Prob1	.9513	0.21588	.0079189

In the first table above, one can see that the mean probability that the change-point value falls within the range [1934; 1951] is 0.9422. However, accounting for year 1933 increases the probability (albeit not substantially) to reach 0.9513. Thus, the year 1933 is an important year to account for when considering the failure of states with high democratic propensity to consolidate decisively against civil wars.

Appendix C.13: History of Autocratic Propensity

1) Interval tests MCMC sample size = 10,000

Prob1: 1958 < {cp} < 1963

	Mean	Std. Dev.	MCSE
Prob1	.9298	0.25550	.0081796

2) Interval tests MCMC sample size = 10,000

Prob1: 1957 < {cp} < 1963

	Mean	Std. Dev.	MCSE
Prob1	.9543	0.20884	.0070061

In the first table above, one can see that the mean probability that the change-point value falls within the range [1958; 1963] is 0.9298. However, accounting for year 1957 increases the probability (albeit not substantially) to reach 0.9543. Thus, the year 1957 is an important year to

account for when considering the failure of states with high autocratic propensity to consolidate decisively against civil wars.

Appendix C.14: High Level of Wealth

1) Interval tests MCMC sample size = 10,000

Prob1: 1930 < {cp} < 1937

	Mean	Std. Dev.	MCSE
Prob1	.5855	0.49266	.0225124

2) Interval tests MCMC sample size = 10,000

Prob1: 1929 < {cp} < 1937

	Mean	Std. Dev.	MCSE
Prob1	.9711	0.16753	.0128809

In the first table above, one can see that the mean probability that the change-point value falls within the range [1930; 1937] is 0.5855. However, accounting for year 1929 increases the probability (substantially) to reach 0.9711. Thus, the year 1929 is a highly important year to account for when considering the success of wealthy states to consolidate decisively against civil wars.

Appendix C.15: Low Level of Wealth

1) Interval tests MCMC sample size = 10,000

Prob1: 1933 < {cp} < 2006

	Mean	Std. Dev.	MCSE
Prob1	.9416	0.23451	.0185362

2) Interval tests MCMC sample size = 10,000

Prob1: 1932 < {cp} < 2006

	Mean	Std. Dev.	MCSE
Prob1	.9678	0.17654	.0100491

In the first table above, one can see that the mean probability that the change-point value falls within the range [1933; 2006] is 0.9416. However, accounting for year 1932 increases the probability (albeit not substantially) to reach 0.9678. Thus, the year 1932 should be accounted for when considering the relatively weak success of poor states at consolidating against civil wars. Given the wide intervals of years, one cannot deduce strong and decisive conclusions about the impact of low per capita GDP on the respective efforts of states to consolidate or to move toward consolidation against civil wars.

Appendix C.16: High Level of Economic Growth .

1) Interval tests MCMC sample size = 10,000

Prob1: 1903 < {cp} < 2005

	Mean	Std. Dev.	MCSE
Prob1	.9392	0.23898	.010004

2) Interval tests MCMC sample size = 10,000
Prob1 : 1903 < {cp} < 2006

	Mean	Std. Dev.	MCSE
Prob1	.9503	0.21734	009259

Equally large are the credible intervals within which the change-point value situates itself when it comes to states with high levels of economic growth. Albeit not substantial, the change in probability reaches a conventional threshold of significance at the .05 level after accounting for the year 2006. This shows that the trend of decrease is in the overall number of civil wars fought in states with high levels of economic growth is a relatively recent trend. Assuming that this pattern remains unchanged, the decrease in the count of civil wars fought in states with high levels of economic growth should persevere. Thus, the results do not contradict the theoretical expectations, which predict an overall notable effort of states with high levels of economic growth to move toward consolidation against civil war.

Appendix C.17: Low Level of Economic Growth

1) Interval tests MCMC sample size = 10,000

Prob1: 1946 < {cp} < 1962

	Mean	Std. Dev.	MCSE
Prob1	. 8689	0.33753	.0125481

2) Interval tests MCMC sample size = 10,000

Prob1: 1946 < {cp} < 1963

	Mean	Std. Dev.	MCSE
Prob1	.9798	0.14069	.0060373

The results in the final interval hypothesis testing appear to be much more conclusive than the ones in model six. In fact, one can argue that the range or interval [1946; 1962] includes the change-point value with approximately 87% probability. However, broadening that range to include the year 1963 strongly contributes to the overall increase of the probability that the change-point value, in fact, lies within the interval [1946; 1963]. Thus, there is an almost 98% chance that the change-point value, accurately identifies a decisive increase over time since the late 1950s in the number of civil wars fought in states experiencing economic recession within the temporal interval [1946; 1963].

Appendix D: Tables of Summary Statistics

Table D.1. Summary Statistics of the Data in Chapter Four

Variable	*Mean*	*Std. Dev.*	*Min*	*Max*
Civil War Type	*.029357*	*.2421858*	*1*	*3*
Democratic Propensity	*.4656176*	*.4988494*	*0*	*1*
Incumbent Consolidation	*.036707*	*.188054*	*0*	*1*
Militarized Executive	*.2454232*	*.4303664*	*0*	*1*
Per Capita GDP	*7.9614*	*1.062553*	*5.31524*	*10.35321*
Yearly GDP Growth	*10.26702*	*1.847241*	*5.552971*	*16.06524*
Rough Terrain	*2.149859*	*1.413818*	*0*	*4.421247*
Rural Population	*8.918441*	*1.412263*	*1.94591*	*13.82323*
Ethnic frac.	*.3864273*	*.2860239*	*0.0012999*	*0.9250348*
Religious frac.	*.3645131*	*.2187835*	*0*	*0.7828*
Polity (Times -1)	*-.2572493*	*7.491332*	*-10*	*10*
*Polity*Ethnic Frac.*	*.2212062*	*3.292165*	*-8.864782*	*8.114686*
*Polity*Rel. Frac*	*-.1355299*	*3.196506*	*-7.782*	*6.4*
New state	*.1422904*	*.3493708*	*0*	*1*
Civil War Recidivist	*.2396191*	*.4268793*	*0*	*1*
Sub-Saharan Africa	*.2447765*	*.429983*	*0*	*1*
MENA	*.1370008*	*.3438709*	*0*	*1*
Latin America	*.1416292*	*.3486925*	*0*	*1*
Asia	*.1801111*	*.3843054*	*0*	*1*

Table D.2. Summary Statistics of the Data in Chapter Five (PRIO100 Dataset)

Variables	*Mean*	*Std. Dev.*	*Min*	*Max*
Total Deaths	*7295.286*	*26965.23*	*100*	*350000*
Civil War Type	*1.892818*	*.3858724*	*1*	*3*
Polity Scores	*1.087151*	*6.583418*	*-10*	*10*
Per capita GDP	*7.46063*	*.8970753*	*5.330478*	*9.794602*
GDP growth	*10.7036*	*2.059087*	*5.912106*	*15.04374*
Ethnic Frac.	*.5558433*	*.2826501*	*.0355107*	*.9016318*
Religious Frac.	*.3770696*	*.1944438*	*0*	*.7828*
Elevation	*2.621221*	*1.1167*	*0*	*4.421247*
Population	*10.1607*	*1.823875*	*5.927531*	*13.95353*
Sub-Saharan Africa	*.2530387*	*.4349933*	*0*	*1*

Table D.3. Summary Statistics of the Data in Chapter Five (KOSVED Dataset)

Variables	*Mean*	*Std. Dev.*	*Min*	*Max*
Total Deaths	*6.871514*	*32.57928*	*0*	*600*
Civil War Type	*2.044474*	*.5940919*	*1*	*3*
Polity Scores	*-1.194136*	*2.605892*	*-7*	*6*
Per capita GDP	*7.077041*	*.9357995*	*5.330478*	*8.902535*
GDP growth	*9.77823*	*1.075958*	*7.580189*	*13.85735*
Ethnic Frac.	*.6790427*	*.1925149*	*.3035241*	*9016318*
Religious Frac.	*.5242861*	*.1959896*	*.1334*	*.7242*
Elevation	*3.079594*	*.5860994*	*0*	*4.182472*
Population	*9.607647*	*1.11247*	*7.505139*	*11.90827*
Sub-Saharan Africa	*.6233675*	*.484627*	*0*	*1*
Duration	*347.6053*	*140.6521*	*22*	*461*

Table D.4. Summary Statistics of the Data in Chapter Six-Full Model

Variable	*Mean*	*Std. Dev.*	*Min*	*Max*
Year	*1913.5*	*54.41507*	*1820*	*2007*
Civil War Count	*1.308511*	*1.571991*	*0*	*10*

Table D.5. Summary Statistics of the Data in Chapter Six- Democratic Propensity

Variable	*Mean*	*Std. Dev.*	*Min*	*Max*
Year	*1913.5*	*54.41507*	*1820*	*2007*
Civil War Count	*.2925532*	*.6329186*	*0*	*4*

Table D.6. Summary Statistics of the Data in Chapter Six- Autocratic Propensity

Variable	*Mean*	*Std. Dev.*	*Min*	*Max*
Year	*1913.5*	*54.41507*	*1820*	*2007*
Civil War Count	*1.026596*	*1.276834*	*0*	*8*

Table D.7. Summary Statistics of the Data in Chapter Six- Wealthy States

Variable	*Mean*	*Std. Dev.*	*Min*	*Max*
Year	*1913.5*	*54.41507*	*1820*	*2007*
Civil War Count	*.3617021*	*.6678413*	*0*	*3*

Table D.8. Summary Statistics of the Data in Chapter Six- Poor States

Variable	*Mean*	*Std. Dev.*	*Min*	*Max*
Year	*1913.5*	*54.41507*	*1820*	*2007*
Civil War Count	*.5585106*	*.7470311*	*0*	*3*

Table D.9. Summary Statistics of the Data in Chapter Six - High Economic Growth

Variable	*Mean*	*Std. Dev.*	*Min*	*Max*
Year	*1913.5*	*54.41507*	*1820*	*2007*
Civil War Count	*.5531915*	*.7474308*	*0*	*3*

Table D.10. Summary Statistics of the Data in Chapter Six -Low Economic Growth

Variable	*Mean*	*Std. Dev.*	*Min*	*Max*
Year	*1913.5*	*54.41507*	*1820*	*2007*
Civil War Count	*1.136206*	*1.790831*	*0*	*6*

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