HOW TO KEEP OUT OF THE CONFLICT TRAP

AN ANALYSIS OF THE PREDICTORS OF RECURRING CIVIL WAR

Bachelor's thesis

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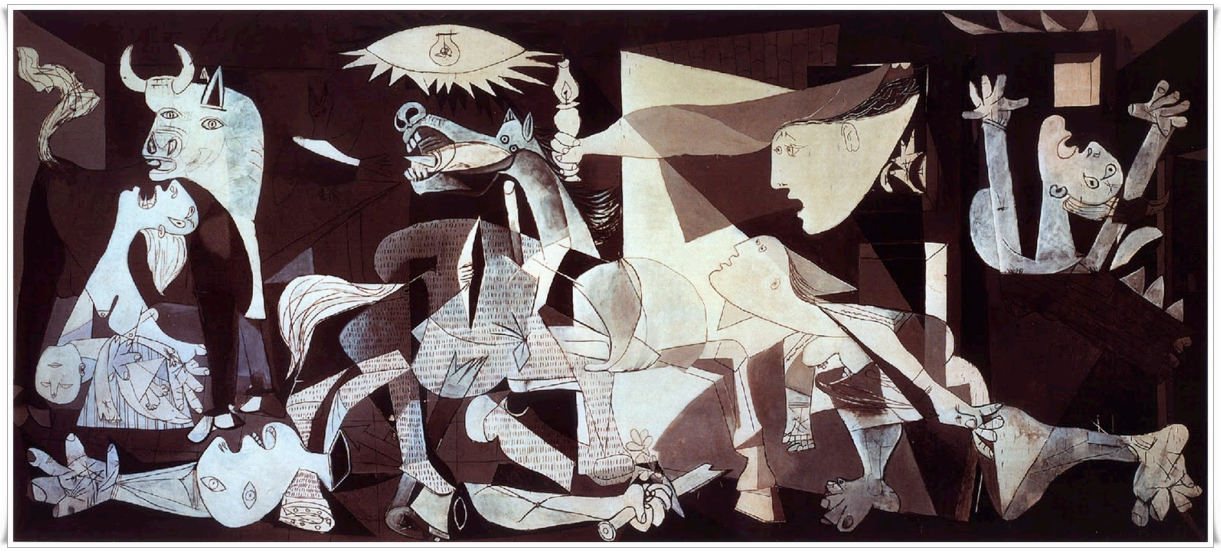

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Guernica, by Pablo Picasso (1937)

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Abstract

Repeated civil war is the primary type of armed conflict today and mires the most chronically underdeveloped countries of the world. Hence, it is not the onset of new civil war but its recurrence that especially deserves explanation. What characteristics distinguish states in which conflicts recur from those where they do not, and what is it about conflicts themselves that explains their recurrence? Thus far, there has been little effort in the quantitative development and conflict literature to address this question. This study aims to contribute to filling that gap. The Conflict Termination Dataset of the Uppsala Conflict Data Program/Peace Research Institute Oslo (UCDP/PRIO) was used to create a data frame that includes all intra-state conflict episodes between 1946 and 2009 (n = 367), in addition to panel data from a variety of sources. With this dataset and the statistical method of logistic regression, fourteen hypotheses based on the theory of civil war and its recurrence were explored. It was found that the probability of recurrent conflict is strongly reduced by military victories (p = .000, OR = .151, 95% CI = .055-.377) and the presence of UN peacekeepers (p = .015, OR = .285, 95% CI = .084-.884). Two robustness tests corroborated these findings. It is recommended that academics be more transparent about how they code their data and become more homogenous in their research designs. To policy-makers, it is advised that they do not base their actions on findings from single quantitative studies on civil war. Having said that, the results of this study indicate that persistent and well-timed policies targeted at peacemaking and peacekeeping may more effectively reduce the probability of recurring civil war than policies targeted at economic development, democratisation or expanding security sectors.

1. Introduction

Civil wars[1] have replaced conflicts between states as the most frequent and deadly type of armed conflict in the world. Only 25 inter-state wars occurred between 1945 and 1999, whereas five times as many civil wars took place (127). These wars also led to five times as many deaths: 16.2 million versus 3.3 million people (Quinn, Mason, & Gurses, 2007, pp. 167-168). Furthermore, they have primarily taken place in the lesser-developed regions of the world – Sub-Saharan Africa and Asia in particular, where many countries appear to be mired in what is referred to as 'the conflict trap' (Collier & Sambanis, 2002): as armed conflict worsens the economic and political conditions that presumably motivated people to fight in the first place, countries risk being subjected to a vicious cycle of conflict and 'development in reverse' (Collier et al., 2003; Walter, 2015).

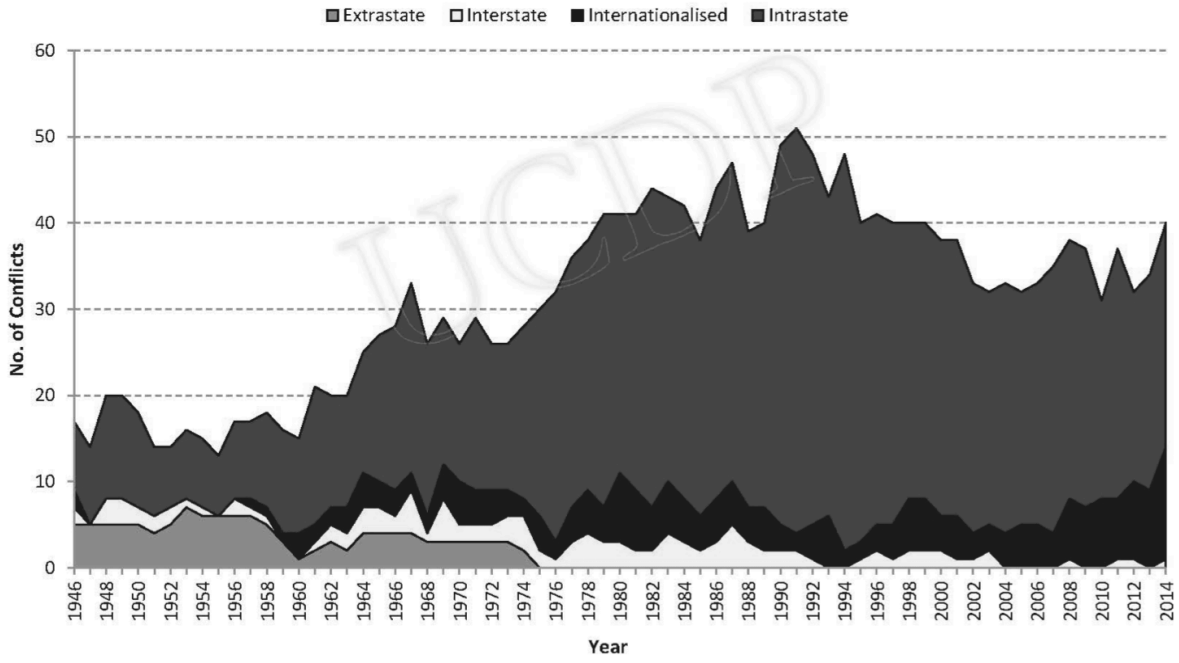

Figure 1.1. Armed conflict by type, 1946-2014. Adapted from "Armed conflicts," by T. Pettersson and P. Wallensteen, 2015, *Journal of Peace Research, 52*(4).

[1] In this research paper I use 'civil wars', 'intra-state conflict' and just 'conflict' interchangeably and thus refer to the same thing. However, the exact operational definition of 'civil war' does vary between studies. This is a methodological topic that is discussed in chapter three.

This concern is supported by a second trend: around half of all civil wars have been due to post-conflict relapses, which means that the number of civil wars is substantially greater than the number of nations that experienced them (Collier et al., 2003; Quinn, Mason, & Gurses, 2007). Moreover, while the sum total of civil wars has reduced since the 1990s (figure 1.1), the rate of recurrence has increased continuously since the 1960s to the point where in the 2000s, 90 per cent of all new conflicts were in countries that had already experienced civil war (Walter, 2015, p. 1). The distribution of these recurring conflicts has also been largely concentrated in the poorest states of the world (Walter, 2010).

In response to the above trends, international policy-making and development practice has evolved to the point where recurring civil war is now a core concern that it comprehensively addresses. This process started in the early 1990s with the end of the Cold War, which allowed for new understandings and interpretations of civil war. Unfettered by the superpower struggles of the previous decades, intra-state conflicts became described as 'new civil wars' (Kaldor, cited in O'Gorman, 2011, p. 5): conflicts that are "a mixture of war, crime and human rights violations" in addition to being strongly related to ethnic or nationalist fervour. The new wars were also understood to be part and parcel of the arising process of globalisation, linked as they were to transnational economic processes and political networks (O'Gorman, 2011).

Despite their complexity, however, the international community also started to show great optimism that the new civil wars could be responded to. In 1992, the United Nations' *Agenda for Peace* brought about an expanded role of the UN in peace making, peacekeeping and peace building where it had previously been paralysed by Cold War vetoes in the Security Council (O'Gorman, 2011). The move was underpinned by a strong conviction that economic and political development toward liberal market democracies was the recipe for an enduring peace in states affected by conflict (Newman, 2011) – of course made gospel at the time by the supposed victory of Western liberal democracy over Communism, which for Francis Fukuyama (1992) signalled the 'end of history' for the evolution of human government.

The above liberal peace thesis became a consolidated policy practice when in response to the UN's failure to keep the peace in Somalia, Bosnia and Rwanda, peace operations further expanded and became pre-occupied with a more comprehensive policy of 'state building as peace building'; now combining the traditional diplomatic and humanitarian approaches to peacekeeping such as the negotiation and

protection of peace agreements and the handling of refugees, with military, institutional and developmental approaches to building up a positive peace (O'Gorman, 2011). This is a peace that is structural and self-sustaining in the long-term, rather than a mere cessation of violence (Galtung, 1969). To this end, the policy framework started to include top-down measures such as democratisation, constitution building and security sector reform, as well as 'softer', bottom-up programmes such as community-based development and reconciliation.

Subsequently after 9/11, the perceived need to develop and thereby stabilise fragile, failing or failed states became even further emboldened in policy thinking as these types of states became identified as safe havens for terrorist movements (O'Gorman, 2011). It deserves note, however, that during the early 2000s terrorism cost about 4.800 lives globally (Frey, Luechinger, & Stutzer, 2004, p. 5), whereas civil war roughly cost about 232.000 lives (Lacina & Gleditsch, 2005; calculations by the author). Also around the turn of the century, international development agencies, governmental agencies and NGOs started to become sensitive to the issue of structurally resolving conflict in the context of the Millennium Development Goals. This is illustrated by the World Bank's (2011) *World Development Report,* which introduced by stating that:

> [Insecurity] has become a primary development challenge of our time. One-and-a-half billion people live in areas affected by fragility, conflict, or large-scale, organized criminal violence, and no low-income fragile or conflict-affected country has yet to achieve a single United Nations Millennium Development Goal. (p. 1)

Considering the weight that the international policy community currently gives to the prevention of recurring civil war, it is surprising that there has been little academic effort to diagnose the causes of recurrence and thereby to test the assumptions of policy. Qualitative works have primarily been pre-occupied with individual case studies of post-conflict development programmes, often highlighting how international efforts at post-conflict reconstruction fail when they are too state-centric and top-down in focus (e.g. Autesserre, 2010). These case studies usually take it as a given, however, that countries can get themselves out of the conflict trap if they manage to comprehensively build themselves up to a liberal

democracy. The quantitative literature, on the other hand, has primarily focused on the general causes of civil war's *onset*. These are determined by comparing cases where conflicts occur to those where they do not (see the cornerstones of Collier & Hoeffler, 2004; Fearon & Laitin, 2003;). Yet considering the trends discussed at the start of this chapter, it is evident that the more appropriate question to be asked is how to permanently end conflicts that have already had a start, rather than how to prevent any new conflicts from starting out (Quinn, Mason, & Gurses 2007).

Hence, the primary goal of this research paper is to try to explain the recurrence of civil war: what characteristics distinguish states in which conflicts recur from those where they do not, and what is it about conflicts themselves that explains their recurrence?[2] This central question is divided into sub-questions for each of the fourteen hypotheses I have posed based on the available theory on civil war and its recurrence. Taken together, their answers provide valuable information as to what kinds of (development) policy may most fruitfully reduce the frequency of recurring civil war.

To explore the underlying risk factors associated with recurring civil war, panel data from a variety of sources was merged into the Conflict Termination Dataset (Kreutz, 2010) of the Uppsala Conflict Data Programme and Peace Research Institute Oslo (UCDP/PRIO). Subsequently, five logistic regression models were run. The Conflict Termination Dataset records all episodes of intra-state conflicts between 1946 and 2009 (n = 367) and has not been used in the quantitative literature thus far save from its introduction by Kreutz (2010). This is in spite of the fact that it has made it considerably easier to identify precisely when a conflict has recurred in comparison to previous datasets.

The paper is organised into six chapters. The following chapter contains a review of the literature, which includes the hypotheses and the theoretical model that have guided the statistical analyses. Chapter three concerns the methodology of this study. This is where I describe the data frame as well as the operationalization of the dependent variable (paragraph 3.1), the sourcing, the operationalization and the initial descriptive statistics of the independent variables (paragraph 3.2), and the implemented method of logistic regression (paragraph 3.3). In chapter four I present the results of the logistic regressions including those of two robustness tests in paragraph 4.2. The results are subsequently discussed in chapter

[2] Because of the focus on states and conflicts this research paper uses nationally aggregated statistics. Note, however, that these can include factors from outside the states' boundaries. In this paper there is only one: the presence UN peacekeeping operations.

five, along with a description of what I find to be the limitations of this study. This finally leads to the conclusions and recommendations in chapter six.

2. Literature review

What is it about specific countries and conflicts that increases the likelihood of repeated civil war? According to the quantitative literature on civil war and its recurrence, there are three groups of factors that may increase the probability of recurrence: those factors that gave rise to or enabled the initial conflict, the characteristics of the prior conflict, and finally the characteristics of the post-conflict strategic environment. In the following, I expand on these groups of risk factors and distil the hypotheses for the statistical analysis. The chapter ends with the conceptual model and with a critical note on the theoretical implications of quantitatively approximating the causes of recurring civil war.

2.1 Root causes and preconditions

Grievances. Development indicators such as GDP per capita and income per capita have been the most robust causal predictors of civil war's onset thus far (Hegre & Sambanis, 2006). Clearly, since such measures are likely worsened by conflict it is reasonable to expect that they may also predict the risk of civil war recurrence (Quinn, Mason, & Gurses, 2007). The exact mechanism at play, however, is interpreted in a variety of ways.

One main interpretation is that people's economic grievances lead to civil war. Theorists within this school of thought subscribe to the theory of 'relative deprivation' laid out by Davies (1962) and Gurr (1971). Relative deprivation occurs when people's economic expectations increase linearly over time but the actual outcomes they experience level off or do not change (figure 2.1). As an example of a situation where expectations rise but outcomes do not change, say a newly elected Nigerian president promises to the Niger Delta a fair share of the region's oil wealth during his electoral campaign, but continues the status quo of unevenly distributed wealth after being elected into office. According to the theory, this results in a gap between expectations and actual outcomes, which could cross a threshold beyond which

there is so much frustration (or 'grievance') that the Niger Deltans are willing to use violent action against the state or another ethnic group that prevents them from meeting their needs.[3] Galtung (1969) termed such persistent and targeted denial of economic opportunity as structural violence: violence that is not direct and personal like physical or psychological violence, but "implicit, normalised and often institutionalised through forms of exploitation, inequality, oppression or discrimination" (O'Gorman, 2011, pp. 23-24).

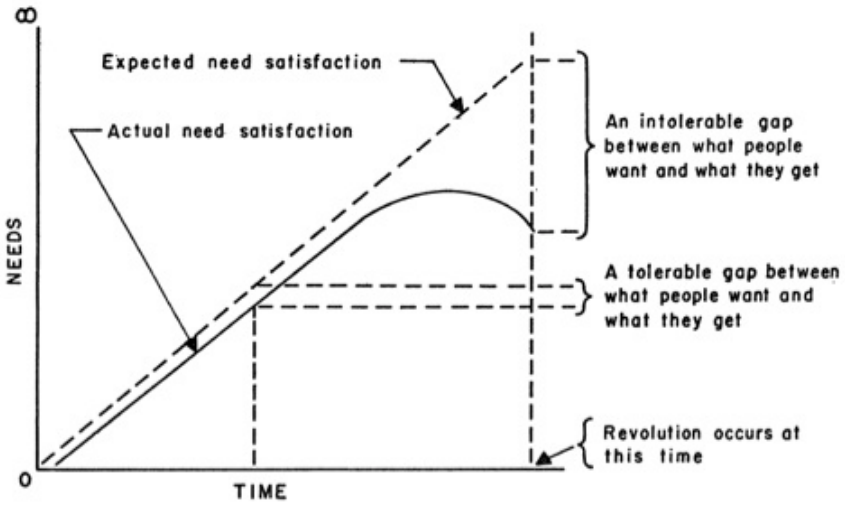

Figure 2.1. Relative deprivation as depicted by James Davies. Reprinted from "Toward a theory of revolution," by J. Davies, 1962, *American Sociological Review, 27*(1), p. 6.

A weakness of the literature on the role of economic grievance, however, is its reliance on the ideas of Sigmund Freud (1950), who posed that aggression is the natural reaction to a state of frustration. Consequently, scholars have linearly assumed that frustration always linearly leads to aggressive behaviour (Østby, 2013). Yet clearly there may be alternative pathways to aggressive behaviour, such as when it is unemotionally used as a means to a given end. That would be a purely criminal type of violence. Moreover, aggression is only one of the possible outcomes of frustration: it might just as well lead to avoidance, apathy, or perhaps constructive coping measures (O'Gorman, 2011, p. 28). Finally, the theory is also unable to ascertain when precisely the relative deprivation gap grows large enough to elicit violent

[3] Note that the 'relative' in relative deprivation does not refer to inter-group comparison, but rather the gap between expectations and outcomes.

reaction. Clearly, the decision to rebel depends on other factors as well. Moreover, note that the relative deprivation gap is in fact not fully captured by a measure such as GDP per capita, since it can only narrowly capture the outcome-side of the relative deprivation gap.

Opposing the above ideas about grievance are the more recent behavioural-economic theories of 'rational choice'. Rational choice-theorists argue that poverty increases the risk of civil war because poor people face a lower opportunity cost to participate in armed conflict: having little to lose, becoming part of a rebel organisation may be more lucrative than engaging in conventional and legal economic activities (Collier & Hoeffler, 2004). The poor are thus supposedly easier to recruit. However, a weakness of this theory is that it assumes people *choose* to participate. As Kalyvas & Kocher (2007) for instance point out, people are usually forced to take sides once they are caught in the crossfire of war.

Yet another interpretation of the effect of development indicators, finally, is that of Fearon and Laitin (2003). These authors argue in a more indirect fashion that lower levels of economic development function as proxies for the weak repressive capacities of states, which in turn enable rebel movements to be formed and survive. I turn to this 'weak state mechanism' that provides for the opportunity to rebel later in this paragraph. No matter the specific mechanism at hand, however, many studies on conflict recurrence do not find that GDP per capita has an effect (Kreutz, 2010; Quinn, Mason, & Gurses, 2007; Rustad & Binningsbø, 2012; Walter, 2010, 2015). In keeping with the theory I nonetheless posit that:

Hypothesis 1: *Conflicts are more likely to recur in countries that have a lower GDP per capita.*

Although the literature tends to test the theory on economic grievances using the absolute measures of GDP or income per capita, relative measures of within-country income or wealth inequality should be a more relevant proxy measure. After all, the theory argues that differences between groups are a major cause of grievance. Such differences generated by wealth inequality have in the past been discussed with regard to the peasant rebellions of the 1960s and 70s (e.g. in the Philippines), which were targeted at asymmetric land distributions (Buhaug, Cederman & Gleditsch, 2014, p. 420). Marxist theory interpreted these uprisings of the working class against the bourgeoisie to be inevitable once "there is nothing to lose [for them] but their chains" (Østby, 2013, p. 208).

In quantitative studies on civil war to date, however, economic inequality has been little studied. Where it has been, measures of income inequality between individuals or households across society[4] have not shown a consistent effect on civil war onset or recurrence (Østby, 2013). However, recent studies have found promising results for measures of horizontal inequality – a broader kind of inequality between groups rather than individuals across society, which beside income also includes the relative access of groups to social and political goods (Østby, 2008; Stewart, 2008). As this type of inequality may worsen as a result of conflict, one may reasonably expect that:

Hypothesis 2: *Conflicts are more likely to recur in countries that are more horizontally unequal.*

Alternatively, scholars have hypothesised that absolute deprivation due to scarce material resources such as water, fisheries, or agricultural land may inspire armed collective action. These (primarily qualitative) researchers subscribe to the ideas of Thomas Malthus, who predicted in *An Essay on the Principle of Population* (1798) that continued population growth would sooner or later have to be checked by famine or disease since "the power of population is indefinitely greater than the power in the earth to produce subsistence for man" (Malthus, 1959, p. 5). In turn, these conditions may lead to competition and frustration and thus again, the willingness to use violent action (Homer-Dixon, 1999; Raleigh & Urdal, 2007; Urdal, 2008).

Malthusian concerns have recently flared up in connection to the environmental scarcities that climate change is expected to produce, where for instance the UN Secretary General Ban Ki-Moon (2011) claimed that due to climate change "competition between communities and countries for scarce resources, especially water, is increasing, exacerbating old security dilemmas and creating new ones." Nonetheless, there is no robust support for the scarcity-hypothesis in the quantitative literature on civil war (Koubi et al., 2014), which has tested a variety of measures such as freshwater availability, forest coverage, and population growth and density, among others (e.g. Hauge & Ellingsen, 1998, Raleigh & Urdal, 2007). Warmer temperatures and more extreme rainfall, however, are consistently related to the occurrence of civil war and violence in general (Hsiang, Burke, & Miguel, 2013).

[4] Also called 'vertical inequality', this is usually measured by the Gini coefficient of income inequality.

Aggregated national-level indicators of environmental scarcity have to my knowledge not yet been studied in relation to conflict recurrence. Although there is no direct measure of scarcity, I assume that population density reasonably proxies for the scarcity of environmental resources. Given the lack of conclusive evidence in the literature, I expect that:

Hypothesis 3: *Conflicts are not more likely to recur in countries that have higher population densities.*

Grievances do not only come from unmet economic needs. Scholars such as Edward Azar (cited in Ramsbotham, 2005) have also identified the relevance of unmet security needs, political access needs and identity needs (meaning cultural and religious expression), which he found are mediated and articulated through people's membership of social groups. According to Azar's theory of 'protracted social conflict', a disarticulation between identity groups and the state is at the core of most internal armed conflicts (Ramsbotham, 2005). Thus, ethnic difference in the context of deprived needs has frequently been cited as another root cause of civil wars' onset.

Normally, the argument has been that situations of high ethnic diversity – measured by an index of fractionalisation[5] – are likely to involve "difficult-to-solve contention deriving from diverging preferences and differential skills and habits" (Buhaug, Cederman & Gleditsch, 2014, p. 419). Or in simpler terms: these are situations that are more likely to involve grievances between ethnic groups. Yet findings on the effect of fractionalisation have been mixed so far. For instance, while Hegre and Sambanis (2006) find a significant effect on the onset of (low-level) civil war, the influential studies of Collier and Hoeffler (2004 and Fearon and Laitin (2003) do not, even though they use the same fractionalisation index. These studies instead argue that conflicts *appear* to be about ethnicity, while in fact 'political entrepreneurs' manufacture and exaggerate perceptions of ethnic difference for their own political or economic gain. With specific regard to the study of recurrence, only Mason et al. (2011) find a significant effect for the ethnic fractionalisation index.

[5] This index measures the probability that two randomly selected persons belong to different ethnolinguistic groups and is calculated with data from the Soviet ethnographic *Atlas Narodov Mira* (Buhaug, Cederman, & Gleditsch, 2014).

More recently however, researchers have pointed out that it is not so much ethnic diversity, but rather ethnic polarisation that increases the risk of conflict (Montalvo & Reynal-Querol, 2005; Østby, 2008). Given that ethnic identities are socially constructed[6] (Anderson, 2006), it is often stressed that a conflict's violence hardens socially constructed group boundaries or 'groupness' (Brubaker, 2004). The cases of Bosnia, Ireland or Rwanda are clear examples of how powerful such social processes of in-group identification and out-group vilification can be. Thus, where measures of ethnic polarisation are particularly high, one would expect that peaceful coexistence after war is especially more difficult. Continued grievances against another ethnic group may inspire people to spoil the peace and restart conflict. Despite these relevant theoretical ideas, however, the measure of ethnic polarisation has not yet been studied in relation to conflict recurrence.

Hypothesis 4: *Conflicts are more likely to recur in countries that are more ethnically polarised.*

Opportunity. More recent theories challenge the explanatory power of grievances. In particular, it is argued that grievances are simply too widespread to causally account for outbreaks of armed conflict (Cederman, Wimmer, & Min, 2010, p. 89). According to theorists within this school of thought, it is instead the degree to which there is access to organisational resources and whether there is the opportunity for a rebel movement to be successful, that more effectively predicts violent collective action. Four mechanisms in particular are discussed.

The first in a series of these critiques was Paul Collier and Anke Hoeffler's (2002) 'greed-hypothesis'. From an analysis of a limited set of 73 civil wars, they found that civil war onset was more strongly associated with the availability of lootable primary commodities[7] than measures of grievance such as economic inequality and lacking democratic rights. Thus, the authors argued it is the economics of 'greed' that explains civil war, whereas grievances are supposedly "a by-product of conflict, manufactured by

[6] I assume here that the alternative viewpoint of 'primordialism', or the belief that there exist ancient hatreds because of 'essential differences' or 'different bloods', is antiquated and incorrect. For examples of this reasoning, see Ignatieff (1993) and Vanhanen (1999). Some would also place Huntington's (1993) 'clash of civilizations' thesis in this category.

[7] Commodities are lootable when they are relatively easy to extract without capital-intensive technology. Compare gemstone pits with offshore oil, for instance. Collier and Hoeffler tested for this factor by taking the share of total primary commodity exports of the GDP, which in effect measures commodity dependence rather than resource abundance.

armed groups to maintain the popular bases of support and labour needed to ensure the continued looting" (O'Gorman, 2011, p. 33).

Despite their questionable proxies of greed,[8] Collier and Hoeffler's thesis did point to an important gap in the theory thus far: the collective action problem. Namely, assuming that people rationally scrutinise their actions, one would expect that an extremely risky and uncertain pursuit such as armed rebellion should be covered by a significant return before people will participate. Otherwise, it should be a net loss activity that grievance alone is unlikely to cover.

The capture of lootable goods may solve this collective action problem, as the rebel movement becomes able to provide the selective incentives – that is, a stake in the goods or profits from those goods that the rebel movement collects – that cover members' risk of participating in violent actions (Quinn, Mason, & Gurses, 2007). Secondly, the large state wealth that high-value primary commodity exports produce might also provide an incentive to rebels and particularly their leadership to capture the state (Humphreys, 2005). Lootable goods may also more generally and separately from 'greed' provide the finance that is necessary for the rebel movement to establish and survive (see the feasibility-hypothesis below). Such finance provides for combat operations: their weapons, ammunition, supplies as well as their manpower (Quinn, Mason, & Gurses, 2007).

Aside from lootable commodities, another source of finance can be the capture of humanitarian or development aid.[9] This possibility is referred to as the Nightingale risk, after Florence Nightingale's objections to Henri Dunant's establishing of the intended impartial and neutral International Committee of the Red Cross in 1863, suspecting it would "render war more easy" (O'Gorman, 2011; Slim, 2002, p. 329). Simply put, flows of aid cannot fully circumvent structures of corruption and diversion and therefore may come to finance and incentivise acts of war. The Dutch investigative journalist Linda Polman (2011) for instance describes in her book *War Games* how the Rwandan Hutu militia received aid

[8] They also interpreted the statistical significant effects of male secondary schooling, GDP per capita, economic growth and diasporas to be indications of greed.

[9] Aid can of course also be directly provided, as the US and the Soviet Union did during the Cold War. Remittances and donations from ethnic diasporas are also hypothesised to be relevant in this regard. Collier and Hoeffler (2004) for instance find that larger diaspora sizes (resident in the United States) increase the risk of conflict renewal, though Collier, Hoeffler and Söderbom (2008) conversely find that they reduce that risk.

via the UNHCR's camps in the Eastern Democratic Republic of Congo in 1994, which enabled them to continue their massacring of Tutsis in bordering Rwanda.

The extent to which the capture of aid might play a role in recurring conflict probably cannot be measured, however, since even if the mechanism exists it is likely to be only a very minor effect of aid. One might equally expect higher levels of aid to contribute to higher levels of GDP per capita, which in turn reduces economic grievances and increases the opportunity cost for rebellion, thereby lowering the risk of conflict recurrence – among other imaginable mechanisms.

Turning to the literature on civil war recurrence, Humphreys (2005) and Collier, Hoeffler and Söderbom (2008) point out that entrenched war economies may incentivise rebels to continue their insurgency, as long as they are able gain more from a situation of war than a situation of peace. Even when, say, a large majority of a rebel movement's membership demobilises and disarms as part of a peace agreement, there may be significant spoilers within a remaining entrepreneurial faction. A fitting example is the Niger Delta, where despite a large and successful demobilisation programme in 2009, factions within the Movement for the Emancipation of the Niger Delta with interests in the oil bunkering trade have continued the violence (Agbiboa, 2013). Considering the above, I posit:

Hypothesis 5: *Conflicts are more likely to recur in countries that have larger deposits of lootable commodities.*

The greed-hypothesis has since been replaced by the more moderate 'feasibility-hypothesis', which similarly predicts that "conditions that determine the feasibility of rebellion are more important than those that influence motivation" (Collier, Hoeffler, & Söderbom, 2008, p. 464). In essence, the feasibility hypothesis extends the previous arguments related to a supposed 'greed' by also including other variables that *enable* rebel organisations to be successful and survive. One popular measure used in this respect is physical geography. For instance, Fearon and Laitin (2003) included the extent of mountainous terrain and forested land, hypothesising that these physical geographies enable rebel organisations to establish secure base camps from which to operate. They found a significant association of mountainous terrain

with the onset of civil war.[10] Many others do not, however (e.g. Collier & Hoeffler, 2004; Collier, Hoeffler, & Rohner, 2009). Furthermore, no studies of civil war recurrence apart from Walter (2010) have found this factor to be significant, which leads me to expect that:

Hypothesis 6: *Conflicts are not more likely to recur in countries that have higher proportions of mountainous terrain.*

Demography is a third factor that may provide opportunities to rebel organisations. High levels of youth unemployment, large populations in general and large youth bulges in particular[11] should provide for a wide supply of manpower to be recruited. While youth unemployment has not been connected to civil war onset or recurrence (e.g. Walter, 2010), the literature does find population sizes to be significantly related to conflict onset and recurrence[12] (Collier & Hoeffler, 2004; Hultman, Kathman, & Shannon, 2015). Urdal (2006) also finds a significant relationship between youth bulges and the probability of civil war. Surprisingly, the effect of youth bulges on the recurrence of civil war has not yet been analysed, even though it is reasonable to expect that recurrence is more likely when a country's demography provides the means (i.e. manpower) to continue fighting:

Hypothesis 7: *Conflicts are more likely to recur in countries with a larger youth bulge.*

A fourth factor that provides the opportunity to rebel is the weakness of state. When there is no 'coercive balance' in favour of the state, there is a military window of opportunity for the rebel movement (Gurr, 1971). Fearon and Laitin (2003, pp. 75-76) for instance argue that "financially, organisationally, and politically weak central governments render insurgency more feasible and attractive due to weak local policing or inept and corrupt counterinsurgency practices." The weakness of states may be proxied through GDP per capita like Fearon and Laitin (2003).[13] But it is also frequently linked to the

[10] It is worth noting that their measure of mountainous terrain was not calculated using geographic information systems (GIS), but was estimated by a single geographer named A. J. Gerrard. Gerrard is the author of the book *Mountain environments: An examination of the physical geography of mountains* (1990, MIT Press).

[11] A youth bulge is measured as the proportion of men between the ages of 15 and 24, relative to the adult or total population.

[12] Usually, the measure of population size is added not to account for the feasibility hypothesis, but to act as a control variable.

[13] This makes it one of the possible interpretations of hypothesis one.

economist Richard Auty's (1993) theory of the resource curse, which predicts that more resource-dependent states tend to be institutionally weak and therefore possibly more prone to the onset and recurrence of conflict. This could be for a number of reasons including corruption, lack of taxation and the associated lack of legitimacy of state governance, or vulnerability to trade shocks (Humphreys, 2005; Koubi et al., 2014). The above 'weak-state mechanism' between natural resource dependence and conflict is an alternative interpretation of hypothesis five.

Finally, there is also evidence for the proposition that anocracies (weak democracies or weak autocracies) are more prone to armed conflict in general (Hegre et al., 2001; Mansfield & Snyder, 2002). Interestingly, it is found that regime type shows an inverted U-curve relationship to civil war (Fearon & Laitin, 2003). This makes sense, since in full democracies civil war should not be necessary as people are free to collectively organise and express their preferences without fear of state repression (Quinn, Mason, & Gurses, 2007, p. 170). True elections also incentivise state leaders to listen to the people's demands, so that they get elected again. Conversely, autocracies are more likely to posses the coercive capacity to nip any opportunity for rebellion in the bud and "intimidate citizens into political quiescence" (Quinn, Mason, & Gurses, p. 170). But the anocracies in between will likely be at least slightly oppressive as well as weak, allowing for grievances to legitimise a violent struggle and improving the rebel movements' chances against the state. Theoretically, this should boost the incentive and opportunity for people to renew civil war in the post-conflict environment.

Studies on conflict recurrence have yet to specifically test for the effect that the presence of an anocracy might have. Though several studies include a 20-point polity score in their statistical analyses and do not find a statistically significant effect (Quinn, Mason, & Gurses, 2007; Walter, 2004, 2010), I suggest that the presence of an anocracy could register a meaningful relation to recurrence:

Hypothesis 8: *Conflicts are more likely to recur in anocracies.*

2.2 Characteristics of the prior conflict

Specific to the issue of recurrence, it is argued that the extremity of continued rebel demands after the prior conflict increases the risk of renewal. Rebels who seek an extreme objective such as a revolutionary overthrow of an incumbent regime are less likely to find settlement than those with more moderate reformist demands (Walter, 2004). As Paul Pillar notes (cited in Walter, 2009, p. 246):

> [T]he likelihood that the two sides in any dispute can negotiate a settlement depends greatly on whether compromise agreements are available. If the stakes are chiefly indivisible, so that neither side can get most of what it wants without depriving the other of most of what it wants, negotiations are less apt to be successful.

The extremity of objectives has not yet been captured in an index, however, so one is left with the possibility to compare the two types of objectives in general: revolution or separation. Separatist conflicts are cited as being more difficult to resolve, especially when they involve symbolically and strategically important territory (Walter, 2009, p. 247). There is simply no in-between option of compromise in these cases. Thus, I expect that:

Hypothesis 9: *Separatist conflicts are more likely to recur than revolutionary conflicts.*

Another two factors that are more frequently discussed with respect to the characteristics of the prior conflict are its duration and intensity (that is, its deadliness). According to Walter (2004, p. 373), duration and intensity are relevant through three mechanisms in particular: a desire for retribution, combat weariness, and the provision of information about relative military capabilities.

The first mechanism relates to the theories on grievance described above (hypotheses 1-4). Since the destructiveness of a conflict influences the degree of grievance and animosity between ethnic groups, it may produce a desire for retribution. Simultaneously, however, one might expect that especially intense and long conflicts dwindle the conflict parties' resources and morale to such an extent that repeated

conflict is prevented. Hence, cost and duration might be related to conflict recurrence in an inverted U-curve that shows an increased probability at the lower two quartiles of their distribution, and a reduced probability at the higher two quartiles.

An important third mechanism, finally, is that the length and intensity of a conflict provide information to each of the conflict parties about the relative strengths of the other. This information is worked into the "decision calculus by which potential combatants choose between sustaining the peace or resuming war" (Quinn, Mason, & Gurses, 2007, p. 175). In other words: as a by-product of having experienced a conflict before, potential combatants can more realistically estimate the expected costs and benefits of starting and participating in renewed armed conflict (Quinn, Mason, & Gurses, 2007, p. 176). The same authors have modelled this calculus as follows:

$$EU_c = P_v(U_v) + (1 - P_v)(U_d) - \sum_{ti=0}^{tv} C_{ti} \quad (1)$$

where EU_c is the expected utility of the action (continuing armed rebellion), U_v what the actor estimates to be the payoff of victory and P_v is the estimated probability of a victory. U_d is the estimate of the cost associated with defeat, with $(1\text{-}P_v)$ as the estimated probability of defeat. The risks or costs of conflict are at the rate of C_{ti} from the present (ti = 0) until the eventual time of victory (tv). Continued civil war will not be preferred as long as the expected utility of sustaining peace (EU_p) is greater:

$$EU_p = U_p + \sum_{ti=0}^{tv} C_{ti} \quad (2)$$

where U_p is the benefit of post-conflict peace, augmented by the costs that would otherwise have been incurred by participating in armed conflict (C_{ti}).

Given this model, the expectation is that if the previous conflict endured for a long time, there will be less incentive to renew civil war. This is because the total estimated cost of engaging in civil war is high when the eventual time of victory (tv) is estimated to be far in the future. Hence, the estimated probability of victory (P_v) will also be lower, resulting in a lower estimated pay-off and higher estimated cost. From their analysis of the sustainability of peace agreements between 1945 and 1981 (n = 41),

Hartzell, Hoddie and Rothchild (2001) corroborate the above prediction: settlements after longer conflicts are more stable. Walter (2004) also finds that longer wars are significantly less likely to recur, arguing this is either because of depleted resources or – along the lines of Quinn, Mason and Gurses (2007) – because a prior war provides information about the conflict parties' relative capabilities.[14] Accordingly, I postulate the following:

Hypothesis 10: *Conflicts are less likely to recur if the prior conflict is of longer duration.*

Similarly, for a higher lethality of a previous conflict, the model predicts that people are less willing to engage in renewed civil war as the estimated rate of its risk (C_{ti}) will be higher and thus the total estimated cost of it as well. Note that in this model, the information mechanism feeds into Walter's (2004) second mechanism of combat weariness rather than the desire for retribution. This is because emotional factors are not explicitly included in these models of rational choice, although retribution might work as a pay-off in itself (U_v). It might explain the findings of Sambanis and Doyle (2000) and Hartzell, Hoddie and Rothchild (2001), which indicate that post-conflict peacebuilding initiatives are actually less stable after conflicts of higher intensity. Nevertheless, the later work by Walter (2004) that looks at conflict recurrence in general finds no significant relationship between intensity and recurrence. In keeping with the expectations of rational choice, however, I predict that:

Hypothesis 11: *Conflicts are less likely to recur if the prior conflict is of higher intensity.*

2.3 Characteristics of the post-conflict strategic environment

A final group of theoretical ideas relates to the way a prior conflict ends and what kind of strategic environment this produces in the post-conflict environment. With 'strategic environment' I mean to refer to the conditions of uncertainty that shape the way two conflict parties interrelate, interact and make strategic decisions toward political ends. These conditions are in large part determined by the way

[14] In later studies by Walter (2010, 2015), however, this finding did not show up again.

conflicts episodes end. Namely, evidence shows that conflicts ending in military victories are less likely to repeat; in particular when they end with a victory for the rebel side (Quinn, Mason, & Gurses, 2007). By contrast, it is found that negotiated settlements are three times as unstable as military victories (Call & Cousens, 2008).

There are three reasons for this difference in stability between victories and settlements. For one, decisive victories impart clearer information about each side's relative strengths and capabilities than settlements do (Walter, 2004, 2009). That is, when a conflict endures until a definite end, the clear domination by the victor should deter the other conflict party from further actions as per the decision calculus described in the previous paragraph.

Secondly, the way conflicts end also determines the degree to which 'dual sovereignty' remains or emerges. Originally coined by Charles Tilly (1978), dual sovereignty "exists when an opposition group has the organisational capacity and popular support to initiate and sustain an armed challenge to the incumbent regime's claim to sovereign authority in the nation" (Quinn, Mason, & Gurses, 2007, p. 173). In other words, this is a situation where the conflict parties have retained sufficient organisational capacity after the initial conflict ends, so that there is no party in full control of governance within the state's territorial boundaries. Such organisational capacity is found to remain relatively intact in the case of a negotiated settlement, meaning that both conflict parties are still able to resume conflict (Wagner, 1993).

Thirdly, security dilemmas can persist after a negotiated settlement. A security dilemma refers to the situation where, since there is no guarantee of security, two parties increase their military strength and spiral into mutual suspicion, thereby increasingly running the risk of renewed violence. By contrast, a military victory tends to largely disband and forcefully disarm the opponent organisation, precluding resumption of armed conflict for a longer time (Quinn, Mason, & Gurses, 2007, p. 173) and thus a security dilemma too. In sum, I hypothesise:

Hypothesis 12: *Conflicts are less likely to recur in cases of military victory.*

Although these findings lead some scholars to call for 'giving war a chance' (e.g. Luttwak, 1999), the international community does not subscribe to this position. Giving war a chance certainly is an immoral

proposition given the immense human cost of retreating the peacekeepers in Rwanda during the 1990s. Since then, the negotiation and consolidation of peace settlements has become one of the United Nations' core activities.

Even though dual sovereignty may persist after a negotiated settlement, the security dilemma between the parties can be moderated by the presence of third-party peacekeepers[15] (Walter, 2002). Hartzell, Hoddie and Rothchild (2001) for instance find that settlements that include explicit third-party enforcement provisions reduce the likelihood of conflict recurrence. Furthermore, the condition of dual sovereignty can ultimately be dismantled as parties disarm and demobilise if a third party is able to guarantee that the other party will do so as well (Quinn, Mason, & Gurses, 2007). Therefore:

Hypothesis 13: *Conflicts are less likely to recur in states where a UN peacekeeping operation is present.*

A final dimension to the post-conflict strategic environment that specifically pertains to negotiated settlements is what is referred to as the credible commitment problem. This problem exists when civil wars recur because governments are too institutionally weak to credibly commit to a settlement (Walter, 2010, 2015). After all, if rebels cannot enforce a government's compliance, any promises by that government are likely to lack credibility. The expected utility of continued fighting may thus overrule that of a peaceful settlement.

Do note the weakness within this argument however: it assumes that the rebel movement is willing to commit and that it is credible to the side of the government. In reality, the problem of credible commitment usually applies to both sides as a consequence of the security dilemma (Derouen, Bercovitch, & Wei, 2009). Nevertheless, Barbara Walter (2010, 2015) has found that indicators of weak governance that specifically score institutional features[16] are more strongly related to the probability of conflict recurrence than indicators of grievance or opportunity. Thus, I pose the following:

[15] Assuming the conflict parties find the intentions of UN peacekeepers to be credible and reliable.

[16] Note that these measures differ from the broad measure of polity type that is utilised for the weak state hypothesis (p. 19). Moreover, what matters for the weak state hypothesis is the (military) coercive capacity, rather than credibility. The difference is described in more detail in the next chapter.

Hypothesis 14: *Conflicts are more likely to recur when state governance is less accountable.*

Combining all of the above factors and hypothesised relations into one conceptual model produces the figure below. The three groups of risk factors that exist in the post-conflict environment collectively determine the probability of recurrence. Any recurrent conflict episode then feeds back into these groups to produce a new post-conflict environment that may or may not be more vulnerable to another repetition. Note that the actual theoretical model implemented in the regressions is adjusted according to whether the independent variables are suitable for statistical analysis. These changes will be described in the following chapter.

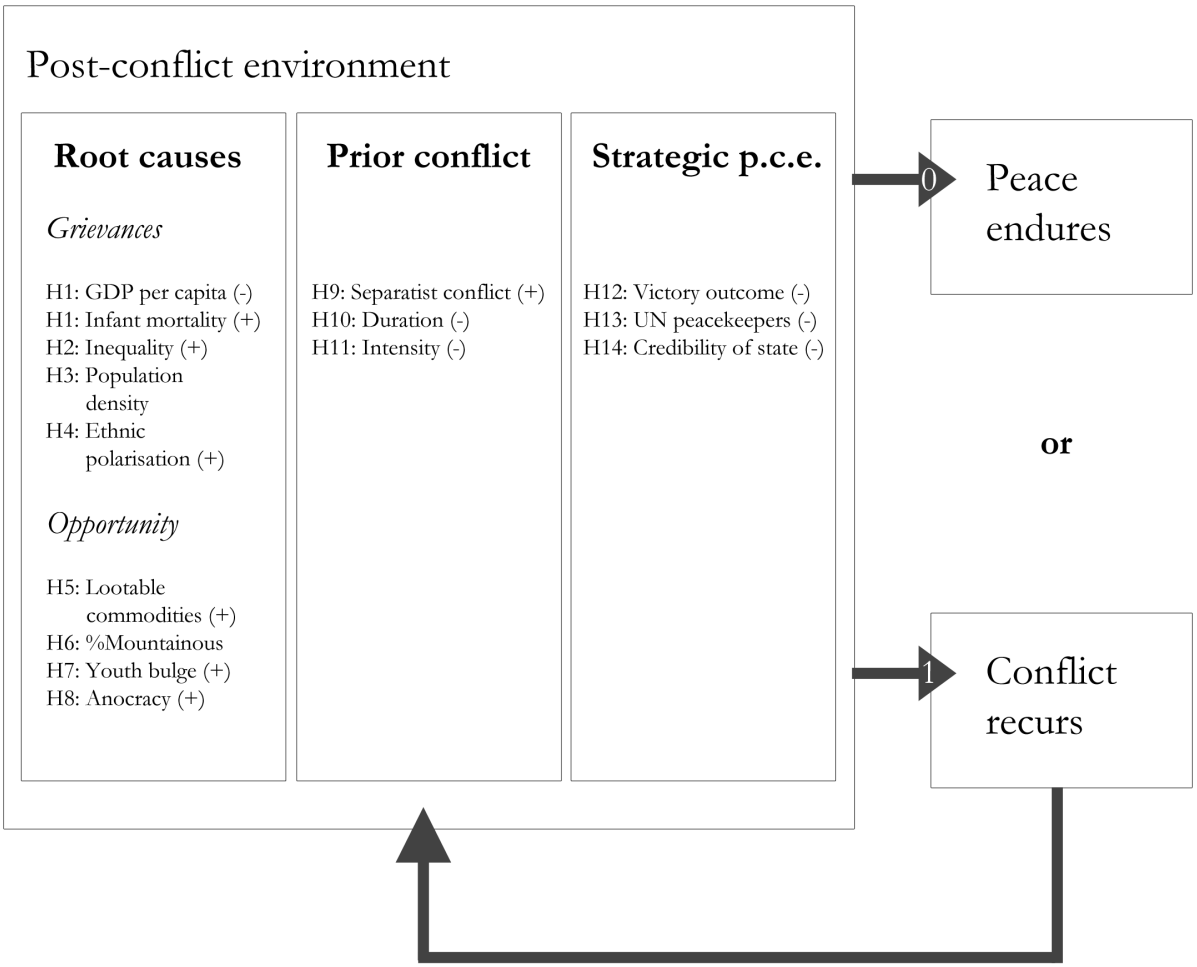

Figure 2.2. Conceptual model of the predictors of conflict recurrence

2.4 Preconditions versus proximate causes and dynamics

It is important at this point to note that all of the factors discussed in the previous three paragraphs will not deterministically cause the onset of recurrent conflict. There is a lot more complexity to the factors than the above may suggest, as they are by no means independent from each other (more on this in the next chapter). There is also a lot more *agency* to the escalation of violent collective action than the above may suggest, which is something few authors in the quantitative literature address. The more proximate causes ('the straw that broke the camel's back') or dynamics of conflict are unfit for quantitative cross-country analyses such as this one and therefore are discussed by qualitative case studies. These case studies form a wide but separate domain within the conflict and development literature of which the findings are harder to generalise. Hence they are not discussed in this research paper.

To further illustrate the issue, it is worthwhile to draw back on Azar (cited in Ramsbotham, 2005). Azar pointed out that whether preconditions activate into armed conflict depends on three groups of proximate factors: communal actions and strategies, such as the nature of leadership and processes of identity group formation,[17] state actions and strategies relating to its choice to either accommodate or coercively repress rebel demands, and the self-reinforcing mechanisms of conflict; the vicious spirals of mutual suspicion where "the worst motivations are attributed to the other side" (1990, p. 5). These three factors simply cannot be captured by aggregated statistics and only through the method of 'process tracing' in qualitative case-study research.

In the proceeding analysis, you should keep in mind that the aim of this research paper is to model the national risk factors of conflict recurrence rather than to try and generalise why and how recurring conflicts come about. To reiterate, these mechanisms and reasons are context-specific, idiosyncratic and thus more suitable for qualitative research. As Hayes (2002, p. 7) points out, the 'statistical laws' approximated in quantitative studies of civil war "… are not rules that govern the behaviour of either nations or individuals; they merely describe that behaviour in the aggregate."

[17] Rebel leadership may for instance actively promote negative images of the other party (a process called 'framing') for recruitment purposes (Benford & Snow, 2000).

3. Data and methods

This study used panel data and logistic regression to quantitatively explore what factors determine repeated civil war. A quantitative methodology is the most appropriate for the central goal of this research paper, namely to uncover which characteristics of countries and conflicts *in the aggregate* heighten the probability of repeat civil war. By contrast, findings from the alternative method of case study-analysis would only apply to the one case in question. I specifically chose to use logistic regression in favour of the alternative of survival analysis because it is comparatively more straightforward to apply and easier to interpret.

In the following paragraph, I describe the main data frame, how recurrence was defined and how it was operationalized into the dataset. This is followed by paragraph 3.2, which goes into the sources and operationalization of the independent variables used in this study, as well as some initial descriptive statistics of these variables. In paragraph 3.3, finally, I discuss the implemented methodology of logistic regression by comparing it to linear regression and by explaining how its output is interpreted.

3.1 Data and dependent variables

The Conflict Termination Dataset. In order to test the posed hypotheses I used the Conflict Termination Dataset (Kreutz 2010) of the Uppsala Conflict Data Programme and Peace Research Institute Oslo (UCDP/PRIO). This dataset records all instances of intra-state armed conflict from 1946 to 2009 between a named and armed non-state group and government forces where each has suffered casualties (n = 367). I chose this dataset because the major alternative used in the literature – the Correlates of War dataset (established by David Singer and Melvin Small, 1994) – only records conflicts that surpass a threshold of a thousand battle-related deaths.[18] This results in a relatively small amount of observations (usually below 100) and additionally causes one to run the risk of estimating the factors that determine the high level of intensity rather than the recurrence of conflict in general (Kreutz, 2010). By contrast, the UCDP's datasets use a threshold of 25 deaths. This results in many more observations over

[18] These are all deaths directly caused by the use of armed force between warring parties, be it state or non-state. Deaths from indirect consequences such as illness are not counted.

a wide range of conflict intensity, which enables one to better generalise the results from the statistical analysis.[19]

The UCDP updates its statistics on a yearly basis and only includes information when it meets its strict coding rules (UCDP, 2015a). That is, a conflict is defined as having started if it surpasses a threshold of 25 battle-related deaths in one calendar year, and continues as long as the annual death count stays above 25. Furthermore, a conflict can only persist as long as a conflict issue is present and the conflict parties remain organised. Other than when it stops to meet these conditions, a conflict episode may terminate by a ceasefire, peace agreement or victory (UCDP, 2011). Of the 368 conflict episodes recorded in the dataset, 39% (142) terminated as a result of not meeting the threshold of minimum deaths. Only 11% of conflict episodes ended with a peace agreement, whereas 28% of them ended by a victory. On average, conflict episodes have taken 1540 days - 4 years and about two months.

The termination dataset is especially suited for studying conflict recurrence because it identifies the starts and ends of individual conflict *episodes* within unique conflicts; that is, conflicts over the same issue, within the same country, and between the same two parties that may or may not have recurrent episodes. Thus, we can use episodes within overall conflicts as our unit of analysis. By contrast, other conflict databases simply record the occurrence of armed conflict by country-year without separating unique conflicts and their conflict episodes, or identifying the ways that they end.

From the dataset, I am able to gather that fifty per cent of all conflicts have at least once repeated with a new conflict episode (89 out of 179 unique conflicts). Furthermore, out of all individual conflict episodes in the dataset, 51% are recurrent episodes (189 out of 367 conflict episodes, see Appendix E). These findings underscore the large role that the recurrence of civil war has played since 1946. Moreover, when these descriptive statistics are grouped by region[20], it is clear that conflict and specifically its recurrence has mostly concentrated in Asia and Africa:

[19] Note that since episodes of conflict are coded only in presence of formal conflict parties and a conflict issue (discussed below), the inclusion of 'random' low-level violence is avoided.

[20] This figure was produced using the right-censored dataset (discussed in the next section); hence the total count is at 330 conflict episodes.

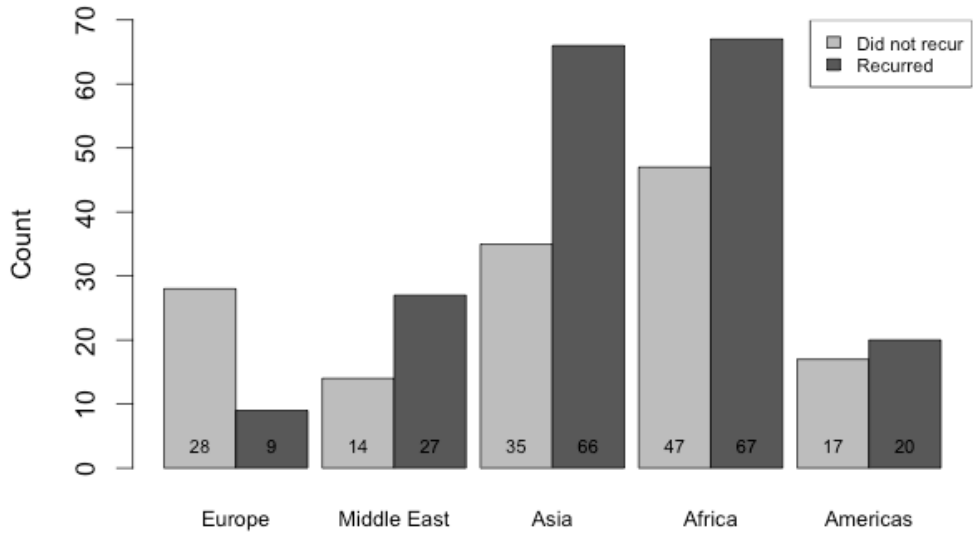

Figure 3.1. Frequency of recurrence by region

Operationalization of the dependent variable. To measure recurrence, I constructed a binary dependent variable *Recur* within the UCDP's Conflict Termination Dataset, which records all individual recurrent conflict episodes after an initial conflict episode. Using similar constructions in other datasets, previous studies have had to correct for a bias toward recurrence; drops below the threshold of battle-related deaths may have indicated short lulls in violent activity rather than a formal end to a conflict episode. Others have therefore had to manually create a buffer of two or more years of peace before a conflict episode would be defined as a recurrence. The benefit of the Conflict Termination Dataset, however, is that it has this correction built in. Any conflict episode that terminates because of a drop below the threshold can only be followed by another after two years of peace. As such, we avoid pseudo-terminations and thereby pseudo-recurrences as well.

Initially, I recorded *Recur* like most papers in the literature: I simply coded "1" or "0" on the basis of whether a specific episode is a recurrence or not. These were then linked to independent variables, most of which were lagged a year prior to the conflict episode to mitigate the issue of endogeneity. This issue occurs when the dependent variable determines the values of the independent variables at the time of measurement. To illustrate, the values of GDP per capita among other variables used in this study will

probably be biased downward during times of armed conflict.[21] Independent variables that are not endogenously related to the effects of conflict or those that are about the conflict episode itself were taken from the initial year of the episode. To illustrate what this looked like in the dataset, take Sri Lanka's armed conflict with the Tamil Tigers (LTTE):

Table 3.1

Example one of Recur *coding for Sri Lanka vs. LTTE*

Episodes: Years	**Recurrence**	**Independent variables**
1: 1984-2001	0	1983 (or 1984)
2: 2003	1	2002 (or 2003)
3: 2005-2009	1	2004 (or 2004)

With this coding, I would have compared the (pre-conflict) characteristics of recurrent episodes with those of non-recurrent episodes. However, while it may seem fine to compare post-conflict situations with a base category of an initial episode, there is one big issue. First episodes of conflicts could never have been a recurrence in the first place. In the above example, the characteristics of 1983/84 could not have led to a value of "1" for the dependent variable. This makes the predictors invalid: they do not measure what I aim to measure, namely which *post-conflict* characteristics affect the risk of repeat civil war. Frankly, this is an issue I have not seen scholars address thus far in the literature.

To fix this issue created by the initial conflict, I created an alternative dependent variable that records whether an episode is followed by a recurrence. Additionally, I changed the direction of the independent variables. Instead of lagging variables to the pre-conflict episode year, I lagged them to the post-conflict episode year. This makes the prior conflict episode the predictor of the absence or presence of the next:

[21] Note that this does not completely avoid endogeneity, however, since recurring episodes are dependent on a prior episode. After all, I am interested in the feedback-effect that conflicts may have on their own causes. I turn to the methodological issue of dependent observations later in this chapter.

Table 3.2

Example two of Recur *coding for Sri Lanka vs. LTTE*

Episodes: Years	**Recurrence**	**Independent variable**
1: 1984-2001	1	2002 (or 2001)
2: 2003	1	2004 (or 2003)
3: 2005-2009	NA	NA

The example shows that because of the forward prediction, I had to right-censor the dataset. All conflict episodes that run past the upper date limit of 2009 were removed from analysis. As such, I manually encompassed the panel data by only including those episodes that have ended within the timeframe of 1946-2009. This procedure removed 37 conflict episodes from the dataset.

Ideally, I would want to take the most proximate values of the post-conflict situation to predict recurrence (starting year of recurrent episode - 1). For instance, when a conflict episode ends in 2001 and a new episode does not occur until 2008, I would prefer the geographical data of 2007 because some variables may vary quite significantly within that time period. But since there are no recurrent episodes to connect values to for all conflicts that have just a single episode, I cannot apply this rule across the dataset. Thus, to code the independent variables on the immediate post-conflict situation of the initial conflict episode (termination year of initial episode + 1) is the best possible option.

Arguably this limitation may be justified by the fact that the immediate post-conflict environment sows the seeds that will determine the later (more proximate) post-conflict situation. Nevertheless, to try and correct for large gaps between episodes, I created two separate binary dependent variables, *Recur5* and *Recur10*, which record only those recurrences that occur within 5 and 10 years after the termination of the initial conflict episode, respectively. These dependent variables were tested separately as robustness checks and their results are presented in paragraph 4.2.

3.2 Independent variables

In the following, I discuss how I operationalized the independent variables used to test for each part of the theoretical model (see page 24). Additionally, I include descriptive statistics of the independent

variables by looking at the differences in their means and proportions for recurring and non-recurring conflicts. Note that for most of the variables, the decision to use particular sources was based on the fact that other well-cited papers have used them. This enables me to legitimately compare my findings to theirs. All independent variables have been lagged to the post-conflict year, unless stated otherwise. They also have all been checked for outliers and influential observations. For a summary overview of the independent variables, please see Appendix A.

Root causes of grievance. To test the hypothesis that civil wars recur more often in underdeveloped states because of grievance or opportunity-cost considerations, I used the most popular proxy of GDP per capita. Data for this variable came from Gleditsch's (2002) expanded *Penn World Tables* dataset[22], and showed a significant amount of skew (4.06) and kurtosis (20.63) in its distribution. High levels of skewness indicate asymmetry in the distribution of values over the x-axis, while high levels of kurtosis indicate problematic 'peakedness' of values on the y-axis near the mean. Taken together, extreme values for these measures[23] indicate that the independent variable has a non-normal distribution (Field, 2013).

In order to normalise such an extreme distribution and avoid bias in statistical analysis, one can take the natural logarithm of the statistic to squash the data into a (more) normal form (Field, 2013). Although it may seem odd to change the form of the data, the relative differences between groups – in this case between recurring and non-recurring conflict episodes – remain unchanged (Field, 2013). Hence, the data for GDP per capita and every other independent variable with non-normal distributions were log-transformed for the logistic regressions. Untransformed, the variable shows that GDP per capita is on average considerably lower for cases of recurrence (2919.68) than non-recurrence (3924.58).

As an alternative development indicator that may better capture the role of grievance, I also collected infant mortality rates from Urdal (2006) and the World Bank's (2015) *World Development Indicators*, which I

[22] Gleditsch expanded this dataset by filling in the missing data points using an alternative data source (the CIA's *World Fact Book*) and by extrapolating beyond the limits of the time series (Teorell et al., 2011, p. 97).

[23] Although there is no specific agreed-upon threshold, researchers indicate as a rule of thumb that values beyond 1 for skewness and values beyond 3 for kurtosis are problematic (ResearchGate, 2015).

merged into one statistic in order to get a larger number of observations.[24] The benefit of this proxy is that it actually gauges the general level of human development rather than a per capita economic situation that may be biased upward by large amounts of wealth at the top of society. Furthermore, I preferred this statistic to the more detailed Human Development Index (HDI) because it has been recorded since 1960, whereas the HDI has only been recorded since 1980 and has more missing data points. Unlike GDP per capita, the infant mortality rates did not show significant skew (.41) or kurtosis (-.19) and did not have to be log-transformed. With respect to the difference in means, recurring conflicts show an average of 96 infant deaths per thousand live births while non-recurring conflicts show an average of 73.

In order to test the hypothesis that inequality leads to a higher probability of recurring civil war, I originally aimed to use data on horizontal inequality because the difference between groups is more relevant to conflict than the difference between individuals. I was unable to find the specific variable in Buhaug, Cederman and Gleditsch's (2014) replication dataset, however, and the alternatives of Østby (2008) and Kuhn & Weidmann (2015) used time frames that are too narrow for this study (1986-2004 and 1992-2009 respectively). Using their data would severely reduce the amount of observations in our logistic regression models.

As a consequence, I opted to use the Gini index of vertical income inequality instead. This is not the best measure for our purposes as it measures inequality between individuals, but it minimally accounts for relative economic differences. I extracted the Gini data from Buhaug, Cederman and Gleditsch (2014), who collected their data from the UN's World Income Inequality Database (UNU-WIDER, 2008). To fill in the missing data points, they linearly interpolated the earliest/latest known values to earlier/later years by country (Buhaug, Cederman, & Gleditsch, 2014, p. 423), which for certain countries involves gaps in time of up to 50 years.[25] Consequently, the results of this independent variable have to be interpreted with great caution. Regarding the variable's distribution, it did not show considerable skew (.43) or kurtosis (-.55) and therefore did not have to be log-transformed. The variable's means show a negligible difference between recurrence (41.04) and non-recurrence (41.62).

[24] I additionally explored the alternative of GDP growth, but decided the statistic showed too much year-to-year variation in its sign to be a reliable predictor.

[25] Even then there remains a considerable amount of missing data points in the dataset (85).

To test the hypothesised effect of environmental scarcity on the likelihood of conflict recurrence, I collected data on population density from the World Bank's (2015) *World Development Indicators*. This statistic shows considerable variation as well as skew (2.50) and kurtosis (9.46) and therefore needed to be log-transformed. Conflict episodes are on average slightly more recurrent in countries that have slightly lower mean population densities: recurring episodes show a mean of 86 people per square kilometre, whereas for non-recurring episodes this figure is at 91.64 people per square kilometre.

Finally, I tested the hypothesis that more ethnically polarised countries are more prone to conflict recurrence with data from Montalvo, Reynal and Querol (2005). Ethnic polarisation is measured on a scale from zero to one (most extremely polarised) and captures the degree of domination of one ethnic group over another - not just the degree of ethnic diversity. One drawback of ethnic polarisation data though is that they are time-invariant, meaning that there is just one value per country for the whole time period of the dataset. Clearly, in reality we would expect degrees of ethnic polarisation to fluctuate over time. With regard to the indicator's distribution, it does not have an abnormal distribution and therefore did not have to be log-transformed. Comparing the means, ethnic polarisation is only slightly higher for recurring episodes (.58) than for non-recurring episodes (.55).

Root causes of opportunity. To test whether deposits of lootable commodities increases the probability of recurring conflict, I pulled data on the availability of primary commodities from Collier, Hoeffler and Rohner's (2009) replication dataset. Values for this statistic were calculated by taking the proportion of primary commodity exports of the country's GDP in a specific country-year. Hence, it is in fact a measure of primary commodity dependence rather than resource abundance. It also does not capture the degree to which the commodities are lootable for rebel organisations, or whether the commodities are actually present in the areas where a specific conflict takes place. I nevertheless initially decided to select the indicator because it was the only available nationally aggregated statistic that might at least in part capture the role of greed. Due to skew (2) and kurtosis (4.38) the variable had to be log-transformed and in its untransformed form, there was little indication of a meaningful means difference between recurring (.11) and non-recurring conflicts (.13).

A methodological issue with the commodities variable, however, is its smaller amount of observations than the rest of the indicators (n = 234). This reduces the power of the logistic regressions. Therefore, as an alternative to the commodity dependence variable I added the dummy variable *resource conflict* to test in the logistic regressions (n = 299). This variable records whether a conflict episode involves the control over resources, which should in a similar way proxy for the availability of lootable resources and the effect that war economies might have on conflict recurrence. Data for the dummy came from Rustad and Binningsbø's (2012) replication dataset and did not have to be lagged as they relate to the conflicts themselves. Recurring conflicts are more often resource conflicts (45.8%) than non-recurring conflicts are (33.9%).

To test whether physical geographies provide the opportunity to repeat civil war I took the most popular variable – percentage of total land area that is mountainous terrain – from the Fearon and Laitin (2003) replication dataset. I did not log-transform this variable although it is close to being problematically skewed (.97). Since the proportion of mountainous terrain is time-invariant save for changes in territorial boundaries, the measure also did not have to be lagged. Comparing the means, there is on average more mountainous terrain in the cases where conflicts recur (25.1%) in comparison to where they do not (21.74%).

With regard to the hypothesis that young demographics produce a higher probability of recurrence, I used data on the degree of youth bulge from Urdal's (2006) replication dataset. Due to a comparatively large number of missing data points, I decided to linearly interpolate data to earlier and later conflict episodes within a cautious range of five years. This added 19 observations (n = 287). Apart from this adjustment the resulting variable did not have to be log-transformed thanks to insignificant skew and kurtosis. Its distribution does show a substantial number of influential observations at the lower end, however (see Appendix B1), meaning that the regression results have to be interpreted with caution. The means between recurring and non-recurring conflicts differ only slightly, with a higher average youth bulge for cases of recurrence (32.50%) than non-recurrence (30.52%).

As an alternative to this statistic, I also collected data on population sizes from the Penn World Tables (Heston, Summers, & Aten, 2009), which were included in the Quality of Government Dataset (Teorell et al., 2015). Due to a high degree of skew (3.08) and kurtosis (8.31) I log-transformed this

variable. The mean population size (in thousands) is greater for conflicts that recurred (109,931.3) than for those that did not (94,213.7).

Fourthly, I tested the weak states hypothesis by recording the presence of an anocracy in a dummy variable. I constructed this dummy using the Polity IV dataset (Marshall, Jaggers, & Gurr 2015), which scores countries based on a scale from full autocracies (-10), to complete democracies (10). In between are the anocracies (-4 to 4). Unexpectedly, episodes have recurred less in anocracies (28%) than in non-anocracies (33.6%). To look at the role of regime type in more detail, I also looked at the mean polity scores for recurring and non-recurring conflict episodes. These show that recurring episodes on average tend to occur in more autocratic states (-1.45), whereas non-recurring episodes are exactly in the middle (0).

As a more concrete alternative to the scoring of anocracies, I additionally collected data on military personnel and military expenditures from the Correlates of War dataset on National Material Capabilities (v. 4.0) (Singer, Bremer, & Stuckey, 1972). To account for differences in population size, I calculated the absolute numbers of military personnel as a percentage of the total population. Then, due to remaining skew (3.19) and kurtosis (12.49) this variable was also log-transformed. The data on military expenditures was only log-transformed due to a large degree of variation as well as skew (12.84) and kurtosis (188.52). On average, recurring episodes show a considerably lower number of military personnel in thousands (281.37 versus 410.79) and slightly smaller military expenditures ($4,857,317.49 versus $4,977,336.58).

Characteristics of the prior conflict episode. I hypothesised that separatist conflicts are more likely to recur than revolutionary conflicts. To test this, I used the variable "incompatibility" that came recorded in the Conflict Termination Dataset as either about territory ("1"), indicating a separatist conflict, or about government ("2"), indicating a revolutionary conflict. The proportions show that about half of both recurring and non-recurring conflicts are separatist: 54% for recurring conflicts, 50% for non-recurring conflicts.

Data for the hypothesis that longer and more intense previous conflicts reduce the likelihood of civil war recurring were available from the UCDP's datasets. I constructed a variable for the duration in days of each individual conflict episode using the start and end dates provided in the UCDP/PRIO Conflict

Termination Dataset. This variable showed considerable skew (3.18) and kurtosis (12.47) and had to be log-transformed. Interestingly, episodes that recur show a higher mean duration in days than episodes that do not recur: 1538.14 days versus 1147.6 days respectively.

Regarding intensity, I collected the number of deaths per conflict episode from the UCDP/PRIO's Battle-Related Deaths Dataset (v. 5) (UCDP, 2015b), which provides a lower, higher and 'best' estimate. The best estimates are missing for a considerable amount of conflict episodes (127), so I created a separate indicator by taking the mean of the lower and higher estimates of fatalities. Given that the total amount of fatalities will partly depend on a conflict's duration, I then calculated the intensity variable by dividing the average total of deaths by the episode's duration in days. Finally, because of high skew (5.26) and kurtosis (33.81), the statistic was log-transformed. Given that its boxplot shows a large amount of influential observations as well as remaining right-tailed skew (Appendix B2), we have to be cautious in interpreting the results this statistic produces. Intensity shows a striking difference in means between episodes that recur (47.63 deaths per day) and episodes that do not (98.82 deaths per day).

Post-conflict strategic environment. To test whether conflicts that terminate by military victories are less prone to recurrence, I used the nominal *outcome* variable already present in the Conflict Termination Dataset. Grouped by the dependent variable (table 3.3 and 3.4), conflicts do not recur more often after negotiated settlements in general (termination 1-3). However, non-recurring episodes show a considerably larger proportion of victory outcomes at 38% versus 25.4% for recurring episodes. Recurring episodes, on the other hand, have more often petered out without a concrete termination ("low activity"), with a proportion of 52.9% compared to 28.9% for non-recurring conflict episodes.

Table 3.3

Cases and proportion of cases per termination for recurring conflicts (n = 189)

Termination	Cases	Proportion (%)
Peace agreement	18	9,5%
Ceasefire agreement (with CR)	13	6,9%
Ceasefire agreement	8	4,2%

Victory	48	25,4%
Low activity	100	52,9%
Other	2	1,1%

Note. CR = conflict regulation, i.e. an agreement to "some sort of mutual conflict-regulatory steps" (UCDP, 2011)

Table 3.4

Cases and proportion of cases per termination for non-recurring conflicts (n = 142)

Termination	**Cases**	**Proportion (%)**
Peace agreement	24	16,9%
Ceasefire agreement (with CR)	12	8,5%
Ceasefire agreement	5	3,5%
Victory	54	38,0%
Low activity	41	28,9%
Other	6	4,2%

Note. CR = conflict regulation, i.e. an agreement to "some sort of mutual conflict-regulatory steps" (UCDP, 2011)

To test for the effect of United Nations peacekeepers on the stability of post-conflict peace, I adapted a dummy variable from Rustad and Binningsbø's (2012) replication dataset that records their presence.[26] UN peacekeepers have on average a lower presence for episodes that recur (8%) than for those that do not recur (19.5%). Do note, however, that the United Nations is not the only possible third party that may mitigate security dilemmas and bargaining problems. Other possible actors such as the African Union or individual partner countries were left out due to the limited time available for this study. Additionally, it deserves note that United Nations peacekeepers have only been present for a small minority of conflict episodes in the dataset (n = 40). As the number of cases increase, this relationship could be more reliably tested in the future.

Finally, to test Walter's (2010, 2015) claim that armed conflict is more likely to recur when the state lacks the credibility to bargain with, I added the Freedom House Civil Liberties Index (Freedom House, 2015) from the Quality of Government Dataset (Teorell et al., 2015). This index scores countries from 1

[26] Using data from the UN, I corrected for some missing and mistaken identifications of peacekeeping operations here.

to 7 on specific political rights and civil liberties; 1 for most free, 7 for least free, thereby giving an indication of the degree to which a government is constrained by the law and its people (Walter, 2014, p. 18). Note that this index scores for a host of specific liberties, while for the earlier Polity IV index, the 'guarantee of civil liberties' is only one part of its total score.[27] As the index is ordinal it did not have to be transformed in any way. I did however lag the data for one year assuming that during war, civil liberties are likely to be especially curtailed. Recurring episodes on average score slightly worse on civil liberties (5.09) than non-recurring episodes do (4.77).

Control variables. Aside from operationalizing the theoretical framework, I also constructed two variables to control for the effect that the different geographical regions (that is, continents) and time in decades might have on the probability of conflict recurrence. Geographical regions came recorded as a categorical variable within the Conflict Termination Dataset (for its descriptive statistics, see figure 3.1). In order to control for time, I constructed a categorical variable by organizing all conflict episodes in decades between 1945 and 2009. For example, a conflict episode in 1952 was coded with the decade number "2", as it took place in the dataset's second decade (1950-1960).

Bivariate correlations and multicollinearity. Finally, to investigate the relationships between the numeric independent variables and diagnose for possible high levels of multicollinearity, I produced a correlation matrix (table 3.5). Multicollinearity refers to the situation where multiple independent variables correlate with one another (or 'overlap'), and thus are not independent in their relationship to the dependent variable. Adding such collinear variables distorts regression models' coefficients, as it might cause some variables to produce false-positive results by becoming significant while they are not (a Type I-error). Inversely, other variables might become insignificant whereas they were otherwise significant, producing a false negative (a Type II-error). On top of that, relationships between independent variables and the dependent variable might even be inversed when a collinear variable is introduced into the statistical model (Tu et al., 2005).

[27] The two scores do however correlate strongly by .77.

Note that multicollinearity in a multiple regression model such as the one I build in this study is more difficult to detect from a correlation matrix alone, because bivariate correlations do not have to be high for significant overlap to occur between multiple independent variables. (Tu et al., 2005). Hence, I test each of the regression models in the next chapter for the issue of multicollinearity using the Variance Inflation Factor (VIF) statistic (explained in the following paragraph). Given the strong correlations in the matrix below, particular caution is warranted for the relationship between the variables of infant mortality and GDP per capita, military expenditures and logged population size, and the intensity and duration of the prior conflict. When put together, these variables could produce distorted results (more on this as well in the next paragraph).

Table 3.5

Bivariate correlations of the numeric independent variables

	1.	**2.**	**3.**	**4.**	**5.**	**6.**	**7.**	**8.**	**9.**	**10.**	**11.**
1. GDP per capita (ln)											
2. Infant mortality	-0.66***										
3. Income inequality	0.07	0.08									
4. Population density	0.04	-0.34***	-0.24***								
5. Ethnic polarisation	-0.02	0.05	0.07	-0.33**							
6. %Mountainous	-0.18***	0.04	-0.08	0.18**	0.30***						
7. Population size (ln)	0.04	-0.10	-0.34***	0.43***	-0.15**	0.05					
8. Youth bulge	-0.40***	0.46***	0.37***	-0.19**	0.02	0.03	-0.14*				
9. Military exp. (ln)	0.48***	-0.47***	-0.37***	0.37***	-0.13*	-0.04	0.70***	-0.38***			
10. Military personnel	0.23***	-0.21***	-0.20**	-0.03	0.04	-0.06	-0.21***	-0.16*	0.25***		
11. Prior duration (ln)	-0.03	-0.03	0.17**	0.08	0.09	0.11*	0.28***	0.06	0.21***	0.09	
12. Prior intensity (ln)	-0.04	0.16**	0.14*	-0.11	-0.01	-0.02	-0.24***	-0.07	-0.19***	-0.01	-0.59***

Note. *$p < .05$, **$p < .01$, ***$p < .001$.

3.3 Statistical methodology

Because the dependent variable is binary and the independent variables are of various levels of measurement, the appropriate statistical method to use is logistic regression (Field, 2013). To implement this method I used the programming language for statistics *R*, which is a more versatile statistical tool that is also more widely used among data scientists than IBM's SPSS.

Logistic regression essentially does the same thing as linear regression, but because of the dichotomous dependent variable its form differs in several respects. First of all, logistic regression does not predict the value of Y given a value of predictor X_i, but instead estimates the *probability* of the outcome of Y (that is, the value of "1") given X_i through the function:

$$P(Y_i) = \frac{1}{1+e^{-(b_0+b_1X_i)}} \tag{3}$$

in which *P(Y)* is the probability of Y and *e* is the base of the natural logarithm (Field, 2013, p. 762). Precisely how the equation works is not important here though, since it works in the background anyway. But a plot of the function is illustrative:

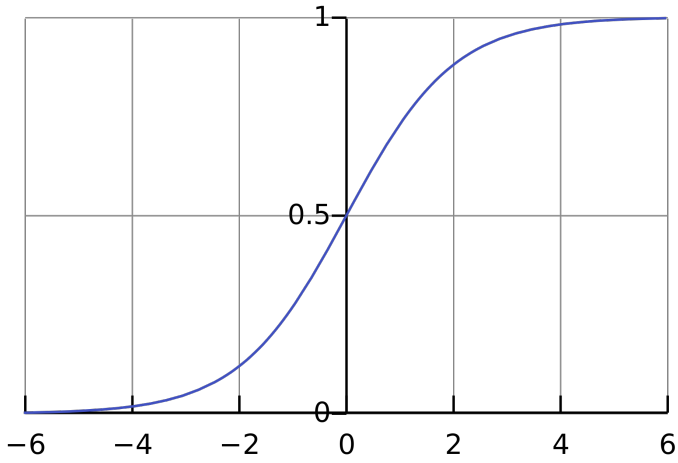

Figure 3.2. Plot of the logistic function (Wikimedia Commons, 2015)

The probability function is s-shaped as it ranges between zero and one. This makes the relationship between the independent variables and outcome of the probability function non-linear, which is a problem for regression because "for it to [produce] a valid model, the observed data should have a linear

relationship" (Field, 2013, p. 762). In order to be able to estimate the intercept and the parameters of a model like in linear regression, one has to 'take the logit' of the probability of experiencing the outcome of interest – in this case conflict recurrence. This logit transformation then equals a linear-shaped model of the log probability (or 'log odds') as follows (Grambow, 2012):

$$\text{logit}(P) = \log\left(\frac{P}{1-P}\right) = \beta_0 + \beta_1 X_i \quad (4)$$

Unlike linear regression, however, the model's parameters (*ß* or '*b*') are estimated not from the method of least squares, but from what is called max-likelihood estimation. Again the idea is essentially the same as with linear regression: the chosen parameter estimates are those which, when the sample data is put into the model, produce the values that most closely resemble the observed values in the dataset (Field, 2013). Then, in order to evaluate whether a model's estimated coefficients produce a good fit with the data, a logistic regression goes through three stages.

First, the predicted values are compared to the observed values in order to test for the fit of the overall model. This produces the log-likelihood statistic. Like the residual sum of squares in linear regression, the log-likelihood measures how much of the observed variance in the data remains unexplained after fitting the model to the data. Clearly, a larger log-likelihood amounts to a poorer fit. A better alternative I use in this study is the Akaike information criterion (AIC), which not only assesses the relative quality of a model but also includes a penalty for each additional independent variable that is put into it. This is to check for 'parsimony': the principle that a simple model is preferred over a complex one.[28] On its own, the absolute value of the AIC does not mean anything: a 10 is not necessarily small and a 1000 not necessarily large. Rather, the only thing to do with the AIC is to compare it to other models with the same dependent variable: if it is smaller compared to a previous model, then the fit is improving (Field, 2013, p. 324).

Secondly, the logistic regression investigates each individual contribution of the independent variables in the model. The statistical significance of each of the contributions is derived from a z-statistic

[28] In other words, the goal is to get at the smallest model with the greatest explanatory power as possible. Otherwise you could keep adding independent variables to incrementally explain bits and pieces of the observed variance in the data, without regard for theoretical relevance. This is also known as the principle of Occam's Razor.

(b/SE_b), which quantifies whether the slope of parameter b is significantly different from zero. For this research paper I used the most commonly used significance level of $p < .05$. Then, to be able to interpret the effect that the independent variables have on the outcome, one has to again transform the estimated parameters (b). This is because they have been adapted into log odds in order to correct for the non-linearity I discussed earlier. By exponentiating these log odds (through e^b), you get their odds ratios (OR).[29] This is a measure of how the odds change after one unit change in comparison to the original odds, with odds being the probability of a positive binary outcome variable Y (1) given X_i, divided by the probability of a negative outcome variable Y (0). To illustrate, an OR of 1.5 would mean a 50% increase in the probability of the positive outcome given one unit change in X_i.[30]

A final third step is to test whether the assumptions of the regression are met. In contrast to linear regression, logistic regression does not make the standard assumptions of linearity, normality and homoscedasticity. Instead it assumes that the observations are independent, that there is no multicollinearity between the independent variables, and that the continuous independent variables are linearly related to the log odds (Statistics Solutions, 2015).

The first of these assumptions will be violated by this study, as it compares conflicts within states and regions that are at the very least partly dependent. It is possible to test whether this dependence is present and problematic due to an effect called 'overdispersion' with a chi-squared goodness-of-fit statistic (Field, 2013). If the ratio between this statistic and the degrees of freedom is greater than one, overdispersion is present. Only when the ratio is greater than two, overdispersion is likely to become problematic and possibly cause Type I-errors (Field, 2013, p. 772).

The second assumption can be tested for individual variables with the Variance Inflation Factor (VIF), the square root of which indicates how much larger the standard errors of these variables are as compared to when they would not have correlated with the other independent variables. VIF values greater than 10 indicate problematic multicollinearity (Field, 2013). Finally, in order to investigate whether the continuous variables are linearly related to the log odds of the dependent variable, one should add the

[29] Their confidence intervals, too, are simply the exponentiated confidence intervals of the coefficients on the logit scale.

[30] It should be emphasised that the interpretation of OR for continuous variables depends on linearity in the logit: that is, "that the association between the independent and dependent variable is constant across all values of the independent variable" (Grambow, 2012).

interaction terms of each independent variable with the log of itself into a separate final model. If any of the interaction terms are significant, the assumption of linearity is violated (Hosmer & Lemeshow, 1989).

4. Results

As my purpose for this study was to explore the predictors of recurrence, I decided to implement a quasi-stepwise selection procedure for the logistic regressions. This means that I first explored which of the variables within the subsets significantly and close-to-significantly predicted recurrence. I then added these variables together in a final model that includes controls, the results of which are presented at the end of paragraph 4.1. After that, the chapter ends in paragraph 4.2 with the outcomes of two robustness tests. Note that each of the main models has been subject to diagnostics tests in order to evaluate whether the assumptions of logistic regression are met. I separately discuss these results when relevant.

4.1 Regressions per subset of the theory

Root causes of grievance. In the previous chapter, I reported that conflict episodes have on average recurred more often in countries with a lower GDP per capita and a higher infant mortality rate. This corresponds with the hypothesis. The other proxies of grievance – economic inequality, population density and ethnic polarisation – showed no substantial means-differences.

When these variables are modelled together in a logistic regression[31] the infant mortality rate is a significant predictor of conflict recurrence at the five per cent level (table 4.1), albeit with a very minor positive effect size (OR = 1.008, 95% CI = 1.001-1.016). Further, the Gini coefficient counter-intuitively suggests that higher income inequality produces a lower probability of recurrence, though in this model I cannot statistically confirm that the effect is beyond coincidental. Population density and ethnic polarisation equally show no statistically significant relation to conflict recurrence.

When the logged variable of GDP per capita is added to the model instead of the infant mortality rate (Appendix C1) the Gini coefficient becomes significant at the five per cent level (p = .017), although

[31] I decided to exclude GDP per capita here, as it is strongly related to the infant mortality rate.

with a minor negative effect (OR = .954, 95% CI = .919-.991). All else being equal, this would mean that the probability of recurring conflict decreases by about 4.6% with each additional unit of the Gini measure.[32]

Table 4.1

Logistic regression of the grievance subset

Predictor	Coefficient (SE)	Significance	VIF
Infant mortalities (per 1,000 live births)	.008 (.004)	.036*	1.165
Gini coefficient	-.033 (.02)	.088^	1.223
Population density (people per sq. km of land area)	.061 (.157)	.699	1.552
Ethnic polarisation	.686 (.942)	.467	1.136

Note. AIC = 273.77; chi^2-ratio = 1.18; n = 207.

^$p < .10$, *$p < .05$.

Root causes of opportunity. With respect to the factors ascribed to greed and opportunity, I found conform the hypothesis that conflicts have on average recurred more often when they are about resources. Furthermore, countries with greater proportions of mountainous terrain have on average been slightly more prone to recurrence. Recurrence has also been more prevalent among countries with bigger populations and larger youth bulges. Finally, I found no considerable difference in means concerning the role of state weakness as indicated by the presence of an anocracy.[33] I however did find that civil wars have on average recurred less in countries with greater proportions of military personnel and bigger military expenditures – as expected.

When the indicators are modelled together in a logistic regression, the factors of mountainous terrain, youth bulge, and anocracy are close to being a statistically significant determinant of conflict recurrence.[34] Counter-intuitively, the situation of anocracy appears to considerably reduce the probability of recurrence, though I cannot statistically confirm that the effect is beyond coincidence. The overall

[32] Assuming the assumption of linearity is met (see paragraph 3.3).

[33] Looking at the difference in the average polity score, conflicts do seem to recur more in more autocratic states.

[34] Population size is insignificant when it is put into this model instead of the youth bulge statistic.

model has a lower score on the AIC compared to the previous one, meaning that (roughly speaking) the theory on opportunity explains less of the probability than the theory on grievance does.[35]

Substituting the dummy variable of anocracy by the two alternative military indicators (see Appendix C2 and C3), the youth bulge indicator becomes statistically significant at the one per cent level when logged military expenditures are included (OR = 1.083, 95% CI = 1.022-1.151), and significant at the five per cent level when military personnel is included (OR = 1.062, 95% CI = 1.008-1.122). The military indicators themselves show no significant contribution to the probability of conflict recurrence.

Table 4.2

Logistic regression of the opportunity subset

Predictor	**Coefficient (SE)**	**Significance**	**VIF**
Resource conflict	.43 (.277)	.122	1.032
Mountainous terrain (proportion of total land area)	.012 (.007)	.074^	1.023
Youth bulge (proportion of age 15-29 in adult population)	.05 (.028)	.079^	1.034
Anocracy	-.539 (.297)	.069^	1.031

Note. AIC = 331.1; chi^2-ratio = 1.02; n = 252.

^$p < .10$, **$p < .01$.

Characteristics of the prior conflict. Turning to the characteristics of the prior conflict, I found no meaningful means difference for the factor of incompatibility. Separatist as well as revolutionary objectives take up about half of both recurrent and non-recurrent conflict episodes. Both the duration and intensity of the prior conflict, however, seem at first glance to play a large role in conflict recurrence given their large means differences. An interesting finding is that for duration, the difference points to a direction opposite of what the hypothesis predicted: episodes that recur are on average longer conflicts. However, when the factors of this subset of the theory are simultaneously tested in a logistic regression

[35] Note that strictly speaking, one should interpret the AIC hierarchically by looking at whether the overall model improves in its fit after being *expanded* by the subset. But because my procedure is to first select the relevant variables per subset, this comparison of the AIC does not apply here. I did explore how the AIC changes when I add the subsets hierarchically, and found that the overall fit improves for each subsequent subset that is added.

model (table 4.3), none of them are statistically significant. Additionally, the model's AIC shows a poor fit compared to the previous models.

Table 4.3

Logistic regression of the prior conflict's characteristics subset

Predictor	**Coefficient (SE)**	**Significance**	**VIF**
Incompatibility	.329 (.24)	.17	1.099
Duration (in days)	.101 (.062)	.102	1.509
Intensity (fatalities per day)	-.076 (.081)	.343	1.568

Note. AIC = 437.91; chi^2-ratio = 1.01; n = 321.

Characteristics of the post-conflict strategic environment. From the descriptive statistics, I gathered that conflicts recur on average considerably less often after military victories and considerably more often after armed conflict peters out. I also found that, on average, conflicts recur notably less where UN peacekeeping operations are present and recur more often in countries that have worse (that is, higher) scores on the civil liberties index.

Running a logistic regression with these three variables produces highly significant estimates for both the victory outcome and the presence of UN peacekeeping operations. In addition, the civil liberties index produces a coefficient that is statistically significant at the five per cent level (table 4.4). All else being equal in this model, military victories reduce the probability of repeat civil war by a strong 81,6% (OR = .184, 95% CI = .097-.36). The presence of UN peacekeeping operations also strikingly reduces the probability in this model by about 76.9% (OR = .231, 95% CI = .097-.522). Further, each additional unit on the civil liberties index (that is, every additional level of less civil liberties) augments the probability of a conflict recurring by about 29.4%.

Finally, when a dummy variable for termination by low activity is added to the model instead of the victory dummy (see Appendix C4), it is highly significant with an immense effect (p = .000, OR = 4.217, 95% CI = 2.342-7.77). Everything else held constant in this model, this means that the petering out of conflicts increases the probability of repeated conflict by 322%.

Table 4.4

Logistic regression of the post-conflict strategic environment subset

Predictor	Coefficient (SE)	Significance	VIF
Victory outcome	-1.693 (.352)	.000***	1.064
UN peacekeeping operation	-1.463 (.427)	.000***	1.031
Civil liberties index	.258 (.106)	.015*	1.032

Note. AIC = 352.62; Chi²-ratio = 1.19; n = 225.

*p < .05, ***p < .001.

The final model. In summary of the results above, the statistically significant predictors of conflict recurrence are infant mortality rates (grievances), youth bulges (opportunity), victory outcomes, UN peacekeeping operations and civil liberties (post-conflict strategic environment). Additionally, the variables of income inequality, mountainous terrain and anocracy are potentially relevant.

When these variables are put together in a logistic regression while controlling for time in decades and geographical regions (table 4.5), victory outcomes are statistically significant at the 0.1 per cent level (OR = .151, 95% CI = .055-.377). UN peacekeeping operations are significant at the five per cent level (OR = .285, 95% CI = .084-.884). Therefore, everything else held constant in this model, victory outcomes reduce the probability of conflict recurring by approximately 85% and peacekeeping operations reduce it by about 71.5%.

As a final measure, we need to test the model form in order to see whether these are true results. The diagnostics for the model show no problematic multicollinearity (VIF < 10), overdispersion (chi-squared ratio < 2) or non-linearity between any of the independent variables and the log odds of conflict recurrence (see Appendix D).

Table 4.5

Logistic regression of the final model

Variable	Coefficient (SE)	Significance	VIF
Grievances			
Infant mortalities (per 1,000 live births)	.008 (.008)	.314	1.717
Income inequality	-.037 (.03)	.208	1.337

Opportunity			
Mountainous terrain (proportion of total land area)	.003 (.008)	.756	1.079
Youth bulge (proportion of age 15-29 in adult population)	.089 (.074)	.230	2.204
Anocracy	-.255 (.443)	.565	1.133
Strategic p.c.e.			
Victory outcome	-.962 (.443)	.000***	1.187
UN peacekeeping operation	-1.111 (.533)	.015*	1.055
Civil liberties index	-.038	.731	1.234
Controls[a]			
Decade 5 (1980-90)	-.713 (.710)	.315	1.088
Decade 6 (1990-00)	-.899 (.66)	.173	1.088
Decade 7 (2000-09)	-.369 (.955)	.698	1.088
Region 2 (Middle East)	-.512 (1.192)	.667	1.350
Region 3 (Asia)	-.862 (1.041)	.408	1.350
Region 4 (Africa)	-1.061 (1.229)	.388	1.350
Region 5 (Americas)	-1.025 (1.166)	.379	1.350

Note. AIC = 219.42; chi^2-ratio = 1.21; n = 171.

[a]Decades 1-3 (1940-1970) have no observations due to list-wise deletion caused by the civil liberties index (recorded since 1972). Decade 4 (1970-80) is the reference category.

*$p < .05$, ***$p < .001$.

4.2 Robustness tests

In order to correct for large gaps in time between initial conflicts and their recurrence caused by the coding of the dependent variable (see paragraph 3.1), I ran the same logistic regression models with the two alternative dependent variables *Recur10* and *Recur5*, which include only those episodes that recur within a time period of ten and five years respectively.

In the grievance subset, limiting recurrence to the ten-year period and the five-year period removes the significance of infant mortality rates (table 4.6). Instead, the Gini coefficient now becomes significant at the five per cent level when recurrences are coded within ten years (OR = .96, 95% CI = .924-.997), but drops below statistical significance again when the five-year limit is applied.

Table 4.6

Robustness test of the grievance subset

	Recur10		*Recur 5*	
Predictor	**Coefficient (SE)**	**Significance**	**Coefficient (SE)**	**Significance**
Infant mortalities (per 1,000 live births)	-.003 (.004)	.355	-.002 (.004)	.685
Gini coefficient	-.04 (.019)	.039*	-.036 (.02)	.068'
Population density (people per sq. km of land area)	-.052 (.152)	.734	-.015 (.153)	.921
Ethnic polarisation	.317 (.908)	.727	.229 (.916)	.802

Note. AIC = 291.51 (Recur10), 289.33 (Recur5); n = 207.

'$p < .10$, *$p < .05$.

With respect to the second subset of opportunity, limiting the dataset removes the close-to-significance of mountainous terrain, youth bulge and anocracy. Instead, the predictor of resource conflict becomes significant at the five per cent level for the ten-year limit (OR = 1.905, 95% CI = 1.14-3.20) as well as the five-year limit (OR = 2.057, 95% CI = 1.223-3.478), meaning that the presence of a resource conflict in these two models (all else being equal) increases the probability of recurrence by an impressive 90.5 to 105.7%.

Table 4.7

Robustness test of the opportunity subset

	Recur10		*Recur 5*	
Predictor	**Coefficient (SE)**	**Significance**	**Coefficient (SE)**	**Significance**
Resource conflict	.644 (.263)	.014*	.721 (.266)	.007**
Mountainous terrain (proportion of total land area)	-.003 (.006)	.667	-.001 (.006)	.861
Youth bulge (proportion of age 15-29 in adult population)	.037 (.029)	.197	.048 (.03)	.111
Anocracy	.056 (.29)	.847	.061 (.295)	.835

Note. AIC = 331.13 (Recur10), 319.06 (Recur5); n = 252.

*$p < .05$, **$p < .01$.

Limiting the dataset changes the findings for the subset on the characteristics of previous conflicts (table 4.8). The factor of duration becomes significant at the five per cent level for recurrences within ten years (OR = 1.147, 95% CI = 1.016-1.3) as well as five years (OR = 1.155, 95% CI = 1.014-1.319). Additionally, the intensity of a prior conflict now shows a significant negative relationship to conflict recurrence at the five per cent level in the case of *Recur5* (OR = .821, 95% CI = .683-.976).

Table 4.8

Robustness test of the prior conflict's characteristics subset

	Recur10		*Recur 5*	
Predictor	**Coefficient (SE)**	**Significance**	**Coefficient (SE)**	**Significance**
Incompatibility	.087 (.238)	.716	-.073 (.245)	.766
Duration (in days)	.138 (.063)	.028*	.144 (.067)	.031*
Intensity (fatalities per day)	-.115 (.083)	.167	-.198 (.091)	.029*

Note. AIC = 435.28 (Recur10), 412 (Recur5); n = 321.

*$p < .05$.

Looking at the factors of the strategic post-conflict environment (table 4.9), the main results stay unchanged for both the alternative dependent variables: the victory outcome most significantly affects the risk of conflict recurrence[36] (*ten years:* OR = .194, 95% CI = .093-.384; *five years:* OR = .210, 95% CI = .097-.424). UN peacekeeping operations also remain significantly related to stability (*ten years:* OR = .275, 95% CI = .112-.625; *five years:* OR = .255, 95% CI = .096-.604) and so do civil liberties (*ten years:* OR = 1.282, 95% CI = 1.049-1.578; *five years:* OR = 1.262, 95% CI = 1.034-1.553).

Table 4.9

Robustness test of the post-conflict strategic environment subset

	Recur10		*Recur 5*	
Predictor	**Coefficient (SE)**	**Significance**	**Coefficient (SE)**	**Significance**
Victory outcome	-1.641 (.361)	.000***	-1.561 (.538)	.000***
UN peacekeeping	-1.292 (.434)	.002**	-1.366 (.463)	.003**

[36] The outcome of 'low activity' (i.e. diminished violence for a minimum of two years) also remains highly significantly related to conflict recurrence with a large effect size (OR = 1.16-1.35).

Civil liberties index	0.248 (.104)	.017*	.233 (.103)	.02*

Note. AIC = 349.02 (Recur10), 284.4 (Recur 5); n = 225.

*p < .05, **p < .01, ***p < .001.

Considering the above robustness tests of the subsets, the role of infant mortality rates may deserve to be discarded, while the factors of resource conflict and a prior conflict's duration and intensity gain in potential relevance. Namely, these independent variables become (more) significant as the dependent variable narrows down (or 'calibrates'). The role of the Gini coefficient, on the other hand, is uncertain since it becomes significant at first but then insignificant again with further calibration. The indicators for the victory outcome, low activity outcome and for UN peacekeeping operations retain their strength and significance and are therefore robust.

Finally, when the final model in paragraph 4.1 is repeated (table 4.10), victory outcomes stay highly significant with an odds ratio of .217 for the ten-year limit (95% CI = .084-.526) and .242 for the five-year limit (95% CI = .09-.605). The effect of UN peacekeeping operations also stays statistically significant at the five per cent level with an odds ratio of .274 for the ten-year limit (95% CI = .075-.873) and .197 for the five-year limit (95% CI = .04-.702). This means that in these models, military victories reduce the probability of conflict recurring by about 78% and 75% respectively, while UN peacekeeping operations reduce the probability by about 73% and 80% respectively.

Table 4.10

Robustness test of the final model

	Recur10		*Recur 5*	
Predictor	**Coefficient (SE)**	**Significance**	**Coefficient (SE)**	**Significance**
Grievances				
Infant mortalities (per 1,000 live births)	.000 (.007)	.964	.000 (.007)	.931
Gini coefficient	-.045 (.029)	.964	-.056 (.029)	.06
Opportunity				
Mountainous terrain (proportion of total land area)	-.009 (.008)	.290	-.005 (.008)	.584

Youth bulge (proportion of age 15-29 in adult population)	.043 (073)	.556	.077 (.077)	.317
Anocracy	.238 (.439)	.588	.358 (.440)	.416
Strategic p.c.e.				
Victory outcome	-1.529 (.466)	.001**	-1.417 (.482)	.003**
UN peacekeeping operation	-1.294 (.616)	.036*	-1.626 (.707)	.022*
Civil liberties index	.132 (.143)	.355	.09 (.141)	.522
Controls[a]				
Decade 5 (1980-90)	.197 (.642)	.759	.566 (.584)	.383
Decade 6 (1990-00)	.056 (.58)	.923	.102 (.584)	.861
Decade 7 (2000-09)	.668 (.895)	.455	.743 (.864)	.390
Region 2 (Middle East)	.653 (1.162)	.574	.063 (1.231)	.959
Region 3 (Asia)	.327 (1.016)	.748	-.024 (1.068)	.982
Region 4 (Africa)	.627 (1.197)	.600	.048 (1.26)	.97
Region 5 (Americas)	.283 (1.153)	.806	-.095 (1.221)	.938

Note. AIC = 233.71 (Recur10), 234.27 (Recur5); n = 171.

[a]Decades 1-3 (1940-1970) have no observations due to list-wise deletion caused by the civil liberties index (recorded since 1972). Decade 4 (1970-80) is the reference category.

'$p < .10$, *$p < .05$, **$p < .01$.

5. Discussion

In this chapter I discuss two things. The first is how the results from the logistic regressions – both the significant and the insignificant – compare to the findings and theoretical explanations in the literature thus far, and what the results mean for theory and practice. After that, I qualify the interpretations by summarizing the methodological limitations that have affected the validity and reliability of the results.

5.1 Interpretations

On the whole, the results indicate that root causes from countries' geographical characteristics (whether it involves grievance, greed or feasibility) and the characteristics of a prior conflict do not

convincingly predict the recurrence of civil war. Rather, recurring civil war is most substantially, significantly and robustly determined by factors that relate to the strategic stability of the post-conflict environment. Before we move on to the implications of this overall conclusion, the findings from the individually tested subsets of the theory need to be discussed. Collectively, they provide the answers to the exploratory research question I posed in the introduction: what characteristics distinguish countries in which conflicts recur from those where they do not, and what is it about specific conflicts themselves that explains their recurrence?

Root causes of grievance. In contrast to the theoretical expectation and much of the literature on the onset of civil war, I do not find that GDP per capita explains conflict recurrence. None of the models in this study produced a significant statistic. This corresponds with other authors who have failed to find a significant relation to recurrence (Kreutz, 2010; Quinn, Mason, & Gurses, 2007; Rustad & Binningsbø, 2012; Walter, 2010, 2015). It may be that the effect is absent because GDP per capita relates more strongly with the onset of conflict in general rather than its recurrence, meaning that grievance could be an important factor "in the larger process leading up to [the initial] war", but not its recurrence specifically (Walter, 2015, p. 13). Still, it is surprising not to find an effect given the considerable means-differences I reported in paragraph 3.2.

By contrast, I do find some evidence for the role of infant mortality rates as they weakly increase the probability of recurrence in the grievance subset. Walter (2004) and Quinn, Mason and Gurses (2007) have similarly found a small and statistically significant effect of infant mortality rates, though in his introduction of the Conflict Termination Dataset, Kreutz (2010) has not. Like GDP per capita, I suggest that the infant mortality rate may be a more relevant determinant as to where conflict occurs in the first place, rather than where it recurs. Though more research is needed to confirm this suspicion, the implication for policy practice is that strictly speaking, post-conflict peace is not significantly determined by post-conflict development.

The literature has been inconclusive about whether economic inequality affects the probability of civil war (Østby, 2013). This study adds to this inconclusiveness, as the Gini coefficient is insignificant in the main final model, significant when the data frame is narrowed down to a ten-year limit and then

insignificant again for the five-year limit. In contradiction to the theoretical expectation, the Gini coefficient reduces the probability of repeated civil war in all of the models. Instead of the hypothesised mechanism of grievance, this might be explained by elites having a greater capacity to deter and fend off rebel movements where they hold a larger proportion of a country's total income. It may be worthwhile for future research to explore whether this mechanism is plausible, though the data will first need to be improved. The Gini coefficient suffers from a disproportionate amount of missing data, making wide interpolation a necessity for statistical analysis. Moreover, the Gini coefficient is an imperfect measure of income inequality in the first place: for instance, it does not account for the general level of wealth in a country or to what extent basic needs are provided for.

In keeping with what I predicted based on the literature thus far, I find no evidence that environmental scarcity (proxied by population density) increases the probability of recurrence. No other studies have looked at the relationship between this specific measure and conflict recurrence – perhaps because it is an imperfect proxy for environmental scarcity. For instance, population density may just as well proxy for the enhanced opportunity of rebel movements to recruit. It would be valuable to have further studies test the impact of environmental scarcity on the likelihood of recurrence using more precise and reliable proxy measures or – preferably – actual physical-geographic data, which I did not collect.

Finally, it is surprising not to find that more ethnically polarised countries are more likely to experience repeated civil war. Evidence from cases such as Bosnia suggests that the boundaries between ethnic groups harden because of violent conflict. You would expect this process to be especially marked in situations where ethnic groups are already considerably polarised, and thus you would also expect these cases to experience more recurring civil wars. Given that Montalvo and Reynal-Querol (2005) find that ethnic polarisation determines the onset of civil war, the lack of a significant effect on recurrence could again be because higher polarisations determined the initial conflicts in the first place. As a consequence, there may remain little variance to explain among recurring and non-recurring conflicts. Yet considering the ample variation among the observations in the dataset, this appears not to be the case.[37] Since this is

[37] The variable has a median of .6 and a range of .94 over an index that runs between zero and one.

the first quantitative study of conflict recurrence to include ethnic polarisation, the variable deserves to be further explored through alternative research designs.

Root causes of opportunity. The main results do not confirm that conflicts likely to involve war economies (that is, resource conflicts) are more vulnerable to recurrence. This corresponds with Rustad and Binningsbø (2012), who also do not find a statistically significant effect of resource conflicts in their final model. However, given that the variable becomes significant with a large positive effect size when our dataset is limited to recurrences within five and ten years, the role of resource conflicts deserves to be further investigated in the future. Theoretically, I suggest that the variable may have registered in the robustness tests because contrary to the motive of grievance, the motive of greed is less likely to become latent after war: as long as resources remain present and extractable, the incentive for organisations to continue to illegally extract resources persists.

Secondly, I find no evidence that higher proportions of mountainous terrain increase the risk of conflict recurrence – as expected. While Walter (2010) does observe some indication of an effect, Walter (2015) finds no effect on conflict recurrence whatsoever. In the general literature on conflict onset, too, mountainous terrain has produced little significant results beyond Fearon and Laitin (2003) thus far. This does not necessarily mean that any future effort to test the role of physical geography is wasted, however. Measures that are geographically disaggregated to the actual conflict zone (e.g. the local or regional presence of mountainous terrain) might in fact prove to be relevant, as for instance the findings of Buhaug and Gates (2009) indicate for the duration of conflict.

Thirdly, I find no convincing evidence that youth bulges increase the probability of recurring civil war. The significance may have been dampened due to the influential lower observations in its distribution (see Appendix B1) and the relatively large number of missing data points. Though Urdal (2006) has highlighted the relationship between youth bulges and conflict onset, its association with conflict recurrence would have been a novel finding. I therefore recommend that future research reassess the relationship between youth bulges and conflict recurrence with new and more complete data.

Further, I do not find that anocracies predict the recurrence of conflicts, or that worse polity types more generally do. This corresponds with other studies in the literature on recurrence (Quinn, Mason, &

Gurses, 2007; Walter, 2004, 2010). Again, the absence of evidence might be because a large number of conflicts in the dataset are already 'selected' for this characteristic and vary less as a result. Whatever its cause, the lack of a significant effect does imply that contrary to what is popularly assumed, policies aimed at post-conflict democratisation are not certain to reduce the risk of recurrence.

Finally, there is no evidence that opportunity caused by lower numbers of military personnel and smaller military expenditures increases the probability of recurring civil war. This is surprising considering the marked difference between the means (see paragraph 3.2). By contrast, Mason et al. (2011) and Walter (2015) do find the factors of military personnel and military expenditures (respectively) to significantly reduce the risk of recurrence, though their dataset and their operationalization of the dependent variable differ from this study. Given the results of this study though, it appears that policies that build up security sectors in post-conflict developing countries are also uncertain to reduce the risk of recurrence.

Characteristics of the prior conflict. Contrary to what I hypothesised, there is no evidence to suggest that separatist conflicts are more vulnerable to relapse than revolutionary conflicts. As I noted in the previous chapter, this is simply because both types of conflict make up about half of recurring and non-recurring conflicts. The lack of a relationship challenges some of the literature on recurrence that claims separatist conflicts are more intractable without referring to statistics (Walter, 2009, 2010).

Secondly, with respect to the main dependent variable of recurrence, I cannot statistically confirm that a prior conflict's duration or intensity affects the likelihood of its recurrence. This corresponds with Walter (2010, 2015), who does not find any relationship for either of the variables. Quinn, Mason and Gurses (2007) and Mason et al. (2011) conversely do find that both variables are statistically significant, however. Given the noticeable difference between the means I found for each of the variables, moreover, it is surprising to find no evidence of a relation. With respect to the intensity variable, I suggest this may be in part due to the skew and the influential observations that remained in its distribution after I had log-transformed it (Appendix B2).

The duration of a prior conflict does prove to be significant with a meaningful effect size when the data frame is narrowed down to recurrence within ten and five years. Surprisingly, while rational choice theory predicts that longer conflicts would decrease the probability of recurrence, it instead increases it in

these models. This suggests that longer conflicts generate a desire to seek revenge for the horrors of the past, but only for a limited time. Perhaps the desire fades in people's minds after five or ten years. Similarly, the finding that more intense conflicts are less likely to recur within five years could indicate that beyond five years, people have recovered from war to such an extent that the specific characteristics of the previous conflict come to matter less. Future research could more specifically look at this possibility by testing the effect that alternative timeframes have.

Characteristics of the post-conflict strategic environment. Military victories strikingly and robustly lower the probability of recurring civil war. As Walter (2004) argues, this makes sense because at least one of the conflict parties will be devastated and unlikely to regroup, whereas the victor will likely (re)gain control and thereby deter any further rebellion from starting out. Moreover, as Quinn, Mason and Gurses (2007) explain: victories avoid the instability cased by dual sovereignty since the sovereign control will be in the hands of one party. In absolute terms then, it may seem best to give war a chance and perhaps even to aid conflict parties toward a swift victory. But in spite of the large positive effect that victory outcomes have on post-conflict stability, there are clear drawbacks to this strategy.

First of all, burning conflicts out until the point of military victory comes at a cost. From the dataset I calculate that episodes ending in military victories have on average suffered about 193 casualties a day, as opposed to about 10 casualties a day for those that end with a peace agreement.[38] Furthermore, as Genet (2007) points out, external military support involves problematic trade-offs. For one, in many cases it would not be clear which party deserves support, especially when the choice is between a highly autocratic regime or a similarly human rights-violating separatist movement. Military support would moreover risk recreating the proxy-war environment of the Cold War that, as the case of Vietnam illustrates, far from guarantees anything close to a swift victory. Also absent great-power struggle, it is clear from the more recent U.S. military intervention in Afghanistan that conventional military power does not necessarily provide a short cut to a victory outcome.

[38] This is in part due to a lower average duration for conflict episodes ending in victories (635.72 days versus 1989.74 days for those ending in peace agreements).

From the analysis it further appears that peace agreements have not significantly determined stability thus far, although non-recurring conflicts do on average terminate more often by peace agreements than recurring conflicts. The lack of a significant relationship is in contrast with the literature, which argues that negotiated settlements are unstable (e.g. Call & Cousens, 2008). The good news is that the third-party guarantee of a UN peacekeeping operation, which usually follows and is part of a negotiated peace agreement, does significantly reduce the probability of recurring civil war.[39] As Collier, Hoeffler and Söderbom (2008), Hartzell, Hoddie and Rothchild (2001) and Walter (2004) have argued, having a third-party guarantee provides stability to a negotiated settlement, whereas it would otherwise be destabilized by continued security dilemmas and bargaining problems.

The results further provide the important insight that conflicts significantly recur when they 'terminate' by dwindled violent activity. These tend to be conflicts of lower intensity: on average they show a total of about six casualties a day. Yet in repetition, death counts can add up considerably. For instance, Ethiopia suffered four relapses in its conflict with the Oromo Liberation Front (OLF) between 1978 and 1995, resulting in a total of roughly 7.500 deaths. Conflicts that peter out thus deserve more international attention than they tend to get, which may be due to their lower intensities.

Rather than being interpreted as an actual termination, diminished violence should be interpreted as an opportunity to resolve potentially dormant but unresolved conflict. The negotiation of peace settlements may not be appropriate to these situations, however, given that the literature suggests their success depends on a different timing. Authors such as Zartman (2000) argue that negotiation is only 'ripe' in situations of a hurting stalemate; a situation that occurs when the conflict parties feel incentivised to come to a settlement in order to avoid 'an impending catastrophe' and becoming worse off altogether. Clearly, this will not be the case where violence has petered out and there is no longer an immediate threat. More structural policies of reconciliation rather than formal peace agreements may therefore be more appropriate to these situations. Whatever the specific method, conflict episodes that informally end by 'fading out' deserve to be closely monitored and actively engaged with, rather than ignored.

Finally, there is some (non-robust) evidence that conflicts are more likely to recur in countries that have lower qualities of governance. This corroborates with the theses of Walter (2010, 2015): when

[39] It deserves reiteration, however, that the UN has been present in a relatively small number of cases (40).

governments are constrained and accountable, then there is at least one party who can credibly commit to a settlement. The finding indicates that development policies aimed at improving good governance may prove to be more effective at stabilising post-conflict situations than policies aimed at economic growth. Like policy programmes targeted at reconciliation, policies to promote good governance are especially suitable for situations where armed conflict has become dormant.

5.2 Methodological limitations and wider concerns

I find that four main methodological limitations affect the validity and reliability of this study's findings. A first central methodological concern is the data quality of the independent variables. For one, multiple variables have many missing data points for different cases, causing more than 100 observations to be deleted in the final models. As a result, data for the first three decades of the dataset (1940-1970) have been removed in the final models (70 observations). This means that in exchange for a more complex model, the results can only be said to pertain to the period of 1970 to 2009. It deserves note, however, that the data for the first three decades are relatively sparse and of uncertain quality anyway.

Nonetheless, even when certain variables do have a closer-to-complete range of data points, one still has to assume that they are coarse approximations of actual real-world values. Considering that recent development statistics have proved to be unreliable (e.g. Jerven, 2013), I expect that numbers from post-conflict developing countries of more than a few decades ago will especially be full of errors. On top of these issues concerning validity, there is also a comparatively minor issue of reliability as I am certain to have made some mistakes during the manual merge of the panel data. For instance, it is not unlikely that I may have coded for Nigeria instead of Niger by accident in some of the cases, for some of the variables.

A second concern more generally is that a quantitative methodology can only coarsely explain the causes of civil war. Several of the proxies used to capture the theoretical ideas, moreover, are indirect and uncertain. For instance, while it is clear that the benefit of a young demography to rebel recruitment should be well captured by a youth bulge statistic, such a direct relationship is less evident for factors that involve several possible underlying mechanisms such as GDP per capita. As a result, the interpretations of a significant effect of lower GDP per capita have varied in the literature: it has been connected to the

mechanisms of grievance, opportunity-cost considerations, greed as well as the degree of state capacity (opportunity). Evidently, the researcher's theoretical angle determines how statistical findings are interpreted.

Thirdly, the methodological design of this study involves endogenous relations. That is to say, while I have lagged the independent variables to mitigate the effect that the dependent variable has on them, it is in fact inherent to the theoretical model that there is a feedback effect (figure 2.3). This also means that the independent variables do not have an independent effect on each of the observations in the dataset, which strictly speaking violates one assumption of logistic regression.

Finally, there is also an important methodological concern at a higher level: given that many of the conclusions within the overall literature on civil war diverge from one another, it is clear that research design strongly determines the statistical outcomes. Hence, as Gleason (2014) points out, significant result in one or a couple of models means little in the overall context of the field. I suspect the variation is to a large extent caused by the difference between onset and recurrence, the different datasets and death-thresholds employed, and by the different ways the dependent variable of recurrence is coded. The latter also results in different statistical tests: when the numeric measure of peace duration is used instead of a dummy variable for recurrence, survival analysis is used (e.g. Rustad & Binningsbø, 2012; Walter, 2015).

6. Conclusions and recommendations

This research project has contributed to the academic literature by being the first to comprehensively apply the UCDP's Conflict Termination Dataset to explore the causes of repeated civil war, as well as by having used a novel and improved way to code for recurrence. In the aggregate, the recurrence of civil war is determined not by countries' geographical conditions (economically, culturally or politically), nor by the characteristics of a prior conflict. Instead, it is determined by the strategic post-conflict environment shaped by the way conflicts end (that is, by military victories or by faded violent activity), and by the presence of third-party peacekeeping operations. With respect to the central academic debate about the causes of civil war, therefore, it is not grievance, greed, nor feasibility that best explains its repetition. Regarding policy thought, moreover, the paradigmatically assumed nexus between

democratisation, economic development and peace appears not to hold up for the recurrence of conflict specifically.

Although policies targeted at structural economic development may reduce the probability of conflict in general, this will not meaningfully distinguish countries that suffer repeating civil war from those that do not. Instead, the evidence implies that policies targeted at establishing and maintaining the stability between two conflict parties in the immediate post-conflict situation may most fruitfully keep countries out of the conflict trap in the short to longer term. In theory, aiding conflicts toward a military victory should be the most effective strategy, lending some credence to scholars who advocate for giving war a chance. Yet considering its significant ethical drawbacks and dilemmas, the international community sensibly does not prefer this strategy. Fortunately, this study has also shown that the promotion of peace agreements is a fair alternative – even an almost equally effective alternative when it involves a UN peacekeeping operation. I therefore put forward a simple policy recommendation: expand the number of peace operations of the UN as well as those of regional organisations. Additionally, focus reconciliatory efforts on those situations where conflict has lulled into a termination of violence in particular, as this is where conflicts are most likely to recur.

Conversely, policies of post-conflict economic development, democratisation or the building of security sectors should not be expected to certainly reduce the risk of recurring civil war. This does not mean that we should disinvest in these efforts wholesale however. Though they appear unlikely to prevent conflicts from recurring, they might reduce the probability of new conflicts arising in the longer term. Hence, the advice is to separate the expectations of policy with regard to the onset of conflicts on the one hand, and the recurrence of already existing conflicts on the other.

Note that I put the policy recommendations in the conditionals of "may" and "could". The uncertain data quality and the endogeneity between the variables will have affected the results of this study. Moreover, since the findings of the quantitative literature on civil war appear strongly contingent on methodological design, policy-makers should be cautious not to draw definite conclusions from single analyses such as this one. I therefore also suggest scholars pay more attention to and be more transparent about their research designs. It should be in the interest of all who analyse the causes of conflict that it is clear how different methodologies lead to different results - and which methodologies may be more

flawed than others. A specifically commissioned review of the effects of methodology in the study of civil war and its recurrence would be helpful to future research.

Finally, I more generally recommend that more scholars investigate the recurrence rather than occurrence of civil war, and when they do, take great care in their coding of recurrence. Future studies may be able to expand the statistical models by testing for possibly relevant independent variables I left out of this study, such as horizontal inequality and geographically disaggregated measures of environmental scarcity. To this end, researchers should also continue their efforts to improve data quality and strive for more precise (proxy) indicators. Ultimately, with more reliable data and more consistent research designs, studies should provide more conclusive answers as to what might best keep millions of people out of the conflict trap.

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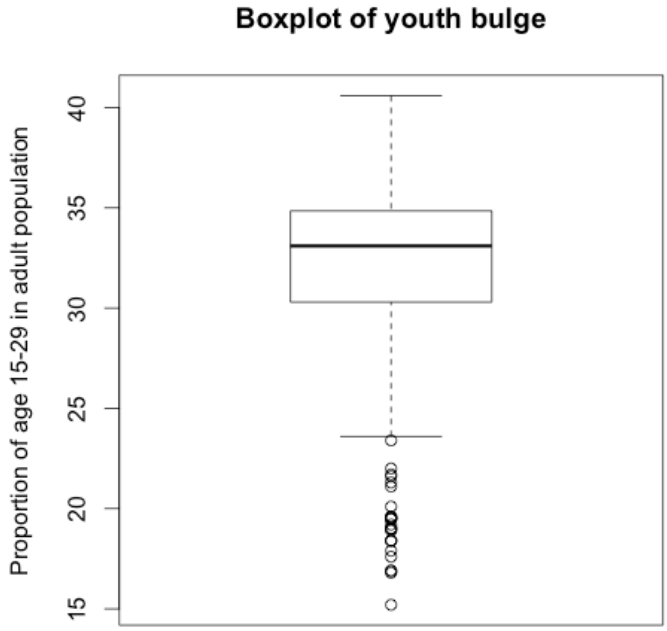
Appendix A: Overview of the independent variables

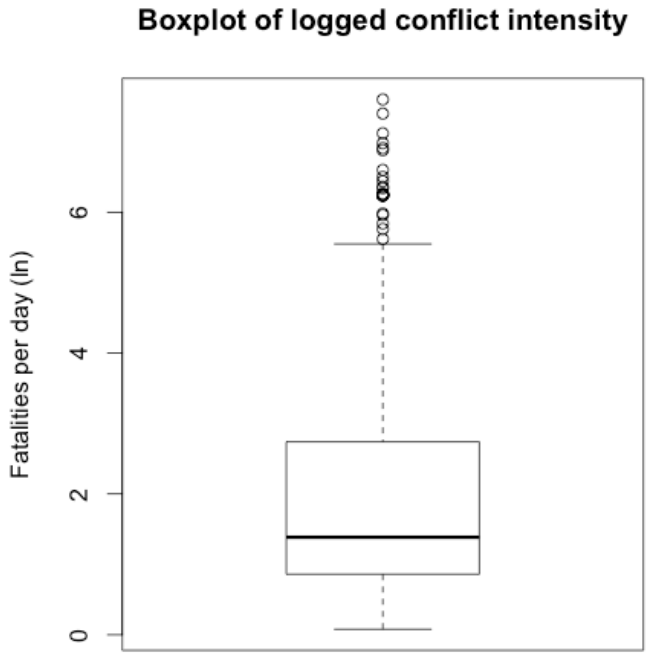
Theoretical subset	Proxy indicators	Source dataset
Grievances	GDP per capita (2002 US$)	Gleditsch (2002)
	Infant mortalities (per 1,000 live births)	The World Bank (2015), Urdal (2006)
	GINI index	Buhaug, Cederman, & Gleditsch (2014)
	Population density (people per sq. km of land area)	The World Bank (2015)
	Ethnic polarisation	Montalvo & Reynal-Querol (2005)
Opportunity	Total primary commodity exports (proportion of GDP)	Collier, Hoeffler, & Rohner (2009)
	Resource conflict	Rustad & Binningsbø (2012)
	Mountainous terrain (proportion of total land area)	Fearon & Laitin (2003)
	Population size (in thousands)	Teorell et al., 2015
	Youth bulge (proportion of age 15-29 in adult population)	Urdal (2006)
	Anocracy (dummy of Polity IV data)	Marshall, Jaggers, & Gurr (2015)
	Military expenditures (2011 US$)	Singer, Bremer, & Stuckey, 1972
	Military personnel (in thousands)	Singer, Bremer, & Stuckey, 1972
Prior conflict	Incompatibility	In Conflict Termination Dataset
	Duration (in days)	In Conflict Termination Dataset
	Intensity (fatalities per day)	In Conflict Termination Dataset
Strategic p.c.e.	Victory outcome (dummy)	In Conflict Termination Dataset
	UN peacekeeping operation (dummy)	Rustad & Binningsbø (2012)
	Civil liberties index	Teorell et al., 2015

Appendix B: Boxplots

B1. Influential observations of the youth bulge variable



B2. Influential observations of the conflict intensity variable



Appendix C: Alternative regressions

C1. GDP per capita (ln)

Predictor	Coefficient (SE)	Significance
GDP per capita (2002 US$)	-.184 (.154)	.233
Gini coefficient	-.046 (.019)	.017*
Population density (people per sq. km of land area)	-.069 (.146)	.637
Ethnic polarisation	.281 (.955)	.769

Note. AIC = 282.1; chi²-ratio = 1.02; n = 212.

*$p < .05$.

C2. Military expenditures (ln)

Predictor	Coefficient (SE)	Significance
Resource conflict	.492 (.284)	.083^
Mountainous terrain (proportion of total land area)	.008 (.006)	.214
Youth bulge (proportion of age 15-29 in adult population)	.08 (.03)	.008**
Military expenditures	.037 (.066)	.571

Note. AIC = 330.45; chi²-ratio = 1.03; n = 251.

^$p < .1$, **$p < .01$.

C3. Military personnel (proportion of total population, ln)

Predictor	Coefficient (SE)	Significance
Resource conflict	.446 (.277)	.107
Mountainous terrain (proportion of total land area)	.007 (.006)	.266
Youth bulge (proportion of age 15-29 in adult population)	.06 (.027)	.026*
Military personnel	-.343 (.359)	.339

Note. AIC = 341.72; chi²-ratio = 1.03; n = 258.

*$p < .05$.

C4. Polity IV score

Predictor	Coefficient (SE)	Significance
Resource conflict	.404 (.277)	.145
Mountainous terrain (proportion of total land area)	.254 (.107)	.018*
Youth bulge (proportion of age 15-29 in adult population)	.045 (.03)	.137
Polity IV	-.013 (.022)	.546

Note. AIC = 334.02; chi²-ratio = 1.03; n = 252.

*$p < .05$.

C5. Low activity outcome

Predictor	Coefficient (SE)	Significance
Low activity outcome	1.439 (.542)	.000***
UN peacekeeping operation	-.766 (.432)	.077^
Civil liberties index	.144 (.103)	.164

Note. AIC = 280.36; chi²-ratio = 1.45; n = 225.

^$p < .1$, ***$p < .001$.

Appendix D: Diagnostic test of linearity in the logit

Variable	Coefficient (SE)	Significance
Infant mortality	.037 (.295)	.901
Income inequality	-.103 (14.359)	.994
Mountainous terrain	-.424 (.311)	.173
Youth bulge	-9.372 (23.97)	.696
Anocracy	-.214 (.482)	.658
Victory outcome	-2.117 (.526)	.000***
UN peacekeeping op.	-1.541 (.675)	.022**
Civil liberties index	.087 (.171)	.614
Log(Infant mortality)	-1.838 (2.641)	.486
Log(Income inequality)	8.807 (101.22)	.931
Log(Mountainous terrain)	1.292 (.811)	.111

Log(Youth bulge)	-33.93 (115.58)	.769
Infant mortality*Log	-.002 (.048)	.973
Income inequality*Log	-.031 (2.516)	.990
Mountainous terrain*Log	.083 (.063)	.188
Youth bulge*Log	-1.831 (4.561)	.688
Decade 5	-.711 (.796)	.372
Decade 6	-.892 (.727)	.22
Decade 7	-.515 (1.012)	.611
Region 2	-.1766 (1.563)	.259
Region 3	-1.669 (1.563)	.286
Region 4	-1.789 (1.749)	.306
Region 5	-1.699 (1.525)	.265

Note. $^{**}p < .01$. $^{***}p < .001$.

Appendix E: List of recurring conflict episodes

Government	Rebel movement	Years
Bolivia	Popular Revolutionary Movement	1946
Bolivia	MNR	1952
Iran	KDPI	1946
Iran	KDPI	1966-1968
Iran	KDPI	1979-1988
Iran	KDPI	1990
Iran	KDPI	1993
Philippines	HUK	1946-1954
Philippines	CPP, Military Faction (forces of Honasan, Abenina & Zumel)	1969-1995
Philippines	CPP	1997
Paraguay	Opposition coalition (Febreristas, Liberals and Communists)	1947
Paraguay	Military faction (forces of Alfredo Stroessner)	1954
Myanmar	KNUP, KNU	1949-1992
Myanmar	KNU	1995
Myanmar	KNU	1997-1998
Myanmar	God's Army, KNU	2000-2003
Myanmar	CPB-RF, CPB, PVO - "White Band" faction	1948-1988
Myanmar	ABSDF	1990-1992
Myanmar	APLP, Mujahid Party	1948-1961
Myanmar	ANLP, CPA, RPF, ALP	1964-1978

Myanmar	ARIF, RSO	1991-1992
Myanmar	MFL-MUF, MPSG/MPF, NMSP	1949-1963
Myanmar	NMSP	1990
India	CPI	1948-1951
India	CPI - ML	1969-1971
India	PWG, MCC	1990-1994
North Yemen	Opposition coalition	1948
North Yemen	Royalists	1962-1970
North Yemen	National Democratic Front	1979-1982
Myanmar	PNDF	1949-1950
Guatemala	Military faction	1949
Guatemala	Forces of Carlos Castillo Armas	1954
Guatemala	FAR I	1963
Israel	Palestinian insurgents, PLO groups, Non PLO groups, Rejectionist Front, PFLP, PFLP-GC, Fatah, Hamas, PIJ, PNA	1949-1996
China	Tibet	1950
China	Tibet	1956
Thailand	Military faction (Navy)	1951
Cuba	M-26-7	1953
Cuba	M-26-7	1956-1958
Indonesia	Darul Islam	1953
Argentina	Military faction (forces of Eduardo A. Lonardi Doucet)	1955
Argentina	Military faction (Colorados)	1963
India	NNC	1956-1959
India	NNC	1961-1968
India	NSCN - IM	1992-1997
India	NSCN - IM	2000
Myanmar	KNPP	1957
Myanmar	KNPP	1987
Myanmar	KNPP	1992
Myanmar	KNPP	1996
Iraq	Military Faction (Free Officers Movement), Military faction (forces of Colonel Abdul Wahab al-Shawaf)	1958-1959
Iraq	NCRC, Military faction (forces of Brigadier Arif)	1963
Iraq	SCIRI	1982-1984
Iraq	SCIRI	1987
Iraq	SCIRI	1991-1996
Lebanon	Independent Nasserite Movement /Mourabitoun militia	1958
Lebanon	LNM, LAA	1975-1976
Lebanon	LNM, Amal, NUF, Lebanese Forces - Hobeika faction	1982-1986
Malaysia	CPM	1958-1960
Malaysia	CPM	1974-1975
Laos	Pathet Lao, Neutralists	1959-1961
Laos	Pathet Lao	1963-1973

Myanmar	NSH, SSIA, SNUF, SSA, SURA, SSNLO	1959-1970
Myanmar	SSA	1972-1973
Myanmar	SURA, SSRA, TRC, MTA	1976-1988
Myanmar	MTA, SSA-S	1993-2002
Ethiopia	Military faction (forces of Mengistu Neway)	1960
Nepal	Nepali Congress	1960-1962
Iraq	KDP	1961-1970
Iraq	KDP, PUK, KDP-QM	1973-1992
Venezuela	Military faction (navy)	1962
Venezuela	Bandera Roja	1982
Democratic Republic of Congo (Zaire)	CNL	1964-1965
Democratic Republic of Congo (Zaire)	Opposition militias	1967
Democratic Republic of Congo (Zaire)	FLNC	1977-1978
Democratic Republic of Congo (Zaire)	AFDL, RCD, RCD-ML, MLC	1996-2001
Burundi	Military faction (forces loyal to Gervais Nyangoma)	1965
Burundi	Palipehutu	1991-1992
Burundi	CNDD, Frolina, Palipehutu-FNL, CNDD-FDD	1994-2006
Chad	Frolinat, First Liberation Army, Second Liberation Army	1966-1972
Chad	FAN, FAP, FAT, GUNT	1976-1984
Chad	GUNT, CDR	1986-1987
Chad	MOSANAT, Revolutionary Forces of 1 April, Islamic Legion, MPS, Military faction (forces of Maldoum Bada Abbas), MDD, CNR, CSNPD, FNT	1989-1994
Chad	FARF, MDD, MDJT	1997-2002
Indonesia	OPM	1965
Indonesia	OPM	1967-1969
Indonesia	OPM	1976-1978
Peru	MIR, ELN	1965
Peru	Sendero Luminoso, MRTA	1982-1999
Ghana	NLC	1966
Ghana	Military faction (forces of Jerry John Rawlings)	1981
Nigeria	Military faction (forces of Patrick Nzeogwu)	1966
Syria	Military faction (forces loyal to Nureddin Atassi and Youssef Zeayen)	1966
Cambodia	Khmer Rouge/FUNK	1967-1975
Philippines	MIM, MNLF, MILF	1970-1990
Sudan	Sudanese Communist Party	1971
Sudan	Islamic Charter Front	1976
Sri Lanka (Ceylon)	JVP	1971
Uganda	Military faction (forces of Idi Amin), Kikosi Maalum	1971-1972
Uganda	Military faction (forces of Charles Arube)	1974

Uganda	Kikosi Maalum, Fronasa, UNLF, FUNA, UNRF, NRA, UFM, UPDA, HSM, UPA, LRA, Lord's Army	1979-1992
United Kingdom	PIRA	1971-1991
Zimbabwe (Rhodesia)	ZAPU	1967-1968
Pakistan	Baluchi separatists	1974-1977
Eritrea	EIJM - AS	1997
Eritrea	EIJM - AS	1999
Angola	FNLA, UNITA	1975-1995
Ethiopia	Ogaden Liberation Front	1964
Ethiopia	WSLF	1976-1983
Ethiopia	ONLF	1994
Ethiopia	ONLF	1996
Ethiopia	ONLF	1999-2002
Indonesia	Fretilin	1975-1989
Indonesia	Fretilin	1992
Afghanistan	PDPA, Jam'iyyat-i Islami-yi Afghanistan, Harakat-i Inqilab-i Islami-yi Afghanistan, (etc.)	1978-2001
India	TNV	1979-1988
India	ATTF	1992-1993
India	NLFT	1995
India	NLFT, ATTF	1997-2004
Nicaragua	FSLN	1977-1979
Somalia	SSDF, SNM	1982-1984
Somalia	SNM, SPM, USC, USC/SNA	1986-1996
Somalia	SRRC	2001-2002
Iran	MEK	1979-1982
Iran	MEK	1986-1988
Iran	MEK	1991-1993
Iran	MEK	1997
Iran	MEK	1999-2001
Liberia	Military faction (forces of Samuel Doe)	1980
Liberia	NPFL, INPFL	1989-1990
Spain	ETA	1978-1982
Spain	ETA	1985-1987
South Africa	ANC	1981-1983
India	PLA	1982-1988
India	PLA, UNLF	1992-2000
Sri Lanka (Ceylon)	LTTE, TELO, EPRLF	1984-2001
Sri Lanka (Ceylon)	LTTE	2003
Cameroon	UPC	1960-1961
Ethiopia	ALF	1975-1976
India	ULFA	1990-1991
Indonesia	GAM	1990-1991
Papua New Guinea	BRA	1989-1990
Mali	MPA	1990

Mali	FIAA	1994
Rwanda	FPR	1990-1994
Rwanda	FDLR	1997-2002
Senegal	MFDC	1990
Senegal	MFDC	1992-1993
Senegal	MFDC	1995
Senegal	MFDC	1997-1998
Senegal	MFDC	2000-2001
Djibouti	FRUD	1991-1994
Haiti	Military faction (forces of Himmler Rebu and Guy Francois)	1989
Haiti	Military faction (forces of Raol Cedras)	1991
Turkey	Devrimci Sol	1991-1992
Angola	FLEC-R	1991
Angola	FLEC-R, FLEC-FAC	1994
Angola	FLEC-FAC, FLEC-R	1996-1998
Angola	FLEC-R, FLEC-FAC	2002
Angola	FLEC-FAC	2004
Angola	FLEC-FAC	2007
Azerbaijan	Republic of Nagorno-Karabakh	1991-1994
Croatia	Serbian Republic of Krajina, Serbian irregulars	1992-1993
Georgia	Republic of South Ossetia	1992
Georgia	Republic of South Ossetia	2004
Tajikistan	UTO	1992-1996
Azerbaijan	Military faction (Forces of Suret Husseinov)	1993
Mexico	EZLN	1994
Russia (Soviet Union)	Republic of Chechnya (Ichkeria)	1994-1996
Pakistan	MQM	1990
Pakistan	MQM	1995-1996
Ethiopia	al-Itahad al-Islami	1995-1996
Niger	FDR	1995
Congo	Ninjas	1993-1994
Congo	Cobras, Cocoyes, Ninjas, Ntsiloulous	1997-1999
Ethiopia	OLF	1977-1978
Ethiopia	OLF	1980-1981
Ethiopia	OLF	1983-1985
Ethiopia	OLF	1987-1992
Ethiopia	OLF	1994-1995
Uzbekistan	IMU	1999-2000
Central African Republic	Military faction (forces of Andr_ Kolingba), Forces of Francois Bozize	2001-2002
Central African Republic	UFDR	2006
United States of America	al-Qaida (The Base)	2001-2002
India	ABSU	1989-1990
India	NDFB	1993-2004

Israel	Hezbollah	1990-1999
Niger	FLAA	1991-1992
Niger	UFRA	1997