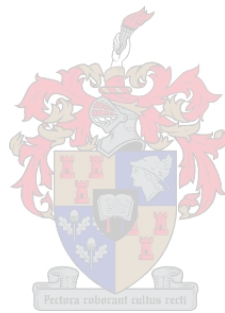


Transnational Dimensions of Civil Conflict Severity

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Declaration

By submitting this thesis electronically, I declare that the entirety of the work contained therein is my own, original work, that I am the owner of the copyright thereof (unless to the extent explicitly otherwise stated) and that I have not previously in its entirety or in part submitted it for obtaining any qualification.

Date: 24 November 2009

Abstract

In an otherwise broad literature on civil conflict little attention has so far been paid to actual conflict violence and variation in severity. Existing work is also hampered by a reliance on a 'closed polity' model of the state, leading to disregard of the transnational dimensions of internal conflict, and by a dependence on over-aggregated data. The present inquiry expands on the existing explanatory framework for variation in civil conflict severity by including transnational factors and characteristics of sub-national actors. Data on conflict battle deaths are combined with recently available data on transnational ethnic linkages, transnational support and neighbouring conflict as well as other actor and country characteristics. Results from ordinary least squares regression analysis indicate that support for rebel groups from external non-state actors increase conflict severity, while rebel presence in other states is associated with less severe conflicts. In addition, severity increases with duration but with a diminishing marginal return. Internal armed conflicts are less severe in democratic and ethnically polarised countries but rebel territorial control increases the level of violence.

Opsomming

In die andersins omvangryke literatuur oor burgerlike konflik is daar tot op hede min aandag geskenk aan werklike konflikgeweld en variasie in felheid (vernietigende omvang). Bestaande werk word ook belemmer omdat dit staat maak op 'n model van die staat as 'geslote regering', wat lei tot verontagsaming van die transnasionale dimensies van interne konflik, en staat maak op oor-geaggregeerde data. Hierdie ondersoek brei uit op die bestaande verklaarende raamwerk vir variasie in felheid van burgerlike konflik deur transnasionale faktore en eienskappe van subnasionale deelnemers in te sluit. Data oor konflikgevegsterftes is gekombineer met onlangse data oor transnasionale etniese koppelings, transnasionale steun en naburige konflik, sowel as ander deelnemer- en landeieskappe. Resultate van gewone kleinste-kwadrateregressie-analise dui daarop dat steun aan rebellegroepe deur eksterne nie-staatsdeelnemers konflikfelheid laat toeneem, terwyl rebelteenwoordigheid in ander lande geassosieer word met minder fel konflikte. Felheid neem ook toe saam met duur maar met 'n afnemende marginale opbrengs. Interne gewapende konflikte is minder fel in demokratiese en etnies gepolariseerde lande, maar rebellebeheer oor grondgebied verhoog die vlak van geweld.

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1 Introduction

1.1 Variation in Civil Conflict Severity

It is estimated that 1.2 million people lost their lives on the battlefield during the Chinese Civil War, raging from 1946 to 1949. Other internal armed conflicts after the Second World War have been much less severe, sometimes not surpassing a hundred deaths in combat annually. So far, little scholarly attention has been devoted to factors explaining variation in civil conflict severity. Moreover, as is shown below, previous research is hampered by a narrow focus on domestic factors. The potential impact of transnational dimensions of civil conflict severity remains largely unexplored. It is by way of filling this gap in the otherwise extensive literature on civil war that this study seeks to add some understanding.

This first chapter is organised as follows: Section 1.2 following immediately below provides a brief introduction to the study of civil conflict severity, to be elaborated upon in Chapter 2. The research problem and aims guiding the present study are presented in Section 1.3 before three central concepts are discussed in Section 1.4. The final Section 1.5 outlines the research design and structure of the following four chapters.

1.2 Background and Literature

Internal armed conflict has been the most common form of armed conflict since the late 1950s (Gleditsch et al., 2002:623). Also, for most of the time since the mid-1970s, the vast majority of battle deaths have taken place in civil conflicts, as opposed to international conflicts (Lacina, 2006:276). Much quantitative empirical research has been conducted in order to establish what factors are central in explaining the onset of civil war (Sambanis, 2002; Hegre and Sambanis, 2006). The study of conflict severity, on the other hand, is a comparatively new and less developed field. One important reason for this has been a lack of systematic measures of and data on the severity of armed conflict (Lacina, Gleditsch and Russett, 2006). Such data have now become available but so far only a few studies, most notably Lacina (2006) and Heger and Salehyan (2007), have utilised the data to investigate factors

potentially explaining variation in internal armed conflict severity. While these studies test a number of hypotheses regarding domestic variables, little attention has been paid to transnational dimensions of civil conflict severity. Amongst other things, this study heeds Lacina's (2006:287) call for further research testing the robustness of her findings.

Some recent contributions to the conflict onset literature have stressed that even though internal armed conflicts per definition are fought between parties within one state, it is erroneous to treat the state as a 'closed polity' and not take transnational dimensions into account (e.g. Gleditsch, 2007; Salehyan, 2007; see also Gleditsch et al., ND). As transnational dimensions have been shown to affect the risk of conflict onset, one could expect this to be the case for variations in conflict severity as well.

Theoretical developments and empirical findings from the quantitative study of risk of conflict onset indicate that aspects such as transnational ethnic linkages (Gleditsch, 2007; Buhaug and Gleditsch, 2008; Cederman, Girardin and Gleditsch, 2007), foreign support for rebel groups (Salehyan, Gleditsch and Cunningham, 2008; Salehyan, 2007; 2008) as well as a contagion effect (Buhaug and Gleditsch, 2008) are significant transnational dimensions. These results inform central hypotheses of the present research project.

On the other hand, conflict severity and conflict onset are two different phenomena. It is thus not given that results from studies of the latter will be directly mirrored in studies of the former. This has been confirmed by previous research on domestic dimensions of conflict severity (Lacina, 2006). Nonetheless, the present study demonstrates that insights from the conflict onset literature can be useful in informing hypotheses when studying civil conflict severity.

1.3 Problem and Objectives

The problem addressed here is how to explain variations in civil conflict severity, with a particular focus on transnational factors. Whether and how transnational dimensions affect the severity of internal armed conflicts is explored. The research question for this study is the following: *Do the presence of certain transnational factors increase the severity of internal armed conflict when domestic factors are held constant?*

The goal of this study, then, is to expand on previous research on factors affecting conflict severity by taking civil conflicts' transnational dimensions into consideration. Specifi-

cally, Lacina's (2006) path breaking study of internal armed conflicts across the globe during the latter half of the twentieth century is used as a point of departure. While her main focus is on domestic factors, she also hypothesises that external military assistance to one of the parties to the conflict might make lead to a higher level of severity. She operationalises this variable by establishing a dummy indicator of whether the conflict started before or after the end of the Cold War, reasoning that the chances for outside assistance were larger before 1989 (Lacina, 2006:281, 285). The research project outlined here has as its aim to make use of other and less crude indicators in order to investigate how factors external to a country that experiences conflict may affect the severity of that conflict. The effect on the results from Lacina (2006) of including new transnational factors will be assessed.

1.4 Central Concepts

1.4.1 Internal Armed Conflict

Internal armed conflict, together with conflict severity and transnational factors, are concepts of particular centrality to this study. They need to be clearly defined for the purpose of this analysis before moving on. Unfortunately, while civil wars are recognised to be "one of the most wide-ranging, violent and protracted forms of contentious politics the world has known" (Tarrow, 2007:587), no single authoritative definition of internal armed conflict or civil war exists (Sambanis, 2004a). Indeed, there is no consensus on what civil war as a phenomenon is. In practice, of course, internal armed conflicts can be difficult to distinguish from other types of organised violence, including coup d'état, genocide or even organised crime (Sambanis, 2004b:268; Gleditsch et al., 2002:623). Internal conflict can also become intertwined with international conflict making a dichotomy between the two potentially misleading (Salehyan, 2008:55). Tilly (2003:18) has gone so far as to argue that civil war cannot be studied separately from other forms of collective violence as it lacks a distinctive ontology (see also Tarrow, 2007). As the study of civil wars have come to be placed squarely within the academic mainstream, it is clear that most conflict researchers disagree with Tilly on this point (Gates, 2002 cited in Holtermann, 2008; Checkel, 2008a). While I move ahead with this study assuming, and seeking to demonstrate, that analysing internal armed conflict as a distinct phenomenon can be fruitful and add to our understanding, the critical remarks cited

above should serve as a reminder that categories of social phenomena are seldom (or indeed never) as clear-cut in experienced social reality as they might appear on paper.

A useful starting point, then, can be the PRIO/Uppsala Armed Conflict Data Project's definition of armed conflict as "a contested incompatibility that concerns government or territory or both where the use of armed force between two parties results in at least 25 battle-related deaths" (Gleditsch et al. 2002:618-9). An internal armed conflict would thus be an armed conflict where just one party is a government and the other is an internal opposition group or alliance of such groups. As is common in the literature, various combinations of 'internal'/'civil'/'interstate' and 'conflict'/'war' will refer to the same basic phenomenon throughout the text.

1.4.2 Conflict Severity

The concept of conflict severity can be approached in a number of different ways. Some alternatives include looking at the duration of the conflict (e.g. Collier, Hoeffler and Söderbom, 2004; Fearon, 2004; Cunningham, Gleditsch and Salehyan, 2009), its economic consequences (Collier et al., 2003) or the number of deaths caused by the conflict (Lacina and Gleditsch, 2005). This study follows the latter approach but this again is not straightforward.

The total number of deaths following indirectly as well as directly from the conflict, i.e. total war deaths, would perhaps provide the most valid impression of the scale of the humanitarian costs of armed conflicts. Such a definition, however, would be very difficult to operationalise and get reliable data on. Not only are records and estimates of such deaths imperfect, but it is also very difficult to delimit such deaths from 'natural' deaths. For example, conflicts can lead to hunger and spread of illnesses as well as destruction of economic and social infrastructure (Gobarah, Huth and Russett, 2003). Should such deaths be counted? Conflict will also weaken a state's economy which again can affect the quality and quantity of public health services. Premature deaths following from this process are difficult to assess in any coherent manner.

A less extensive and more manageable approach is to look at battle deaths, i.e. civilian as well as military fatalities, directly caused by violence conducted as part of the armed conflict. As systematic data of this kind are available for the post-Second World War period, this is the approach followed here. One can also assume that, *ceteris paribus*, the number of

battle deaths will be strongly correlated with total war deaths. The dataset which is used as a source of such data define battle deaths as “deaths resulting directly from violence inflicted through the use of armed force by a party to an armed conflict during contested combat” (Lacina and Gleditsch, 2005:162).

1.4.3 Transnational Factors

A civil war can be seen to have a significant transnational dimension when important dynamics cross national borders. While a distinction is sometimes drawn between international factors – involving one or more governments – and transnational factors – where no government is directly involved, for simplicity both types are here denoted transnational. Transnational factors are present in internal armed conflicts where actors, resources and events span national boundaries (Gleditsch, 2007:293; Gleditsch et al., ND). In the context of this analysis the transnational factors particularly relevant are those which involve some kind of support for one or both parties to the conflict from outside the state in which the conflict takes place (Salehyan, Gleditsch and Cunningham, 2008). More details on the nature of particular transnational linkages are provided in the next chapter.

1.5 Research Design and Structure of Study

The study is structured as follows: In Chapter 2, I establish the analytical framework and theoretical basis based on a review of relevant literature. Insights from the wider literature on transnational dimensions of civil war are central and form the basis of hypotheses on the influence of specific transnational factors on internal conflict severity. It is hypothesised that transnational ethnic ties, foreign government support for at least one of the conflict parties and conflict in one or more neighbouring states can lead to more severe conflicts, principally by increasing the resource base of one or more conflict parties.

As noted above, to a large extent this constitutes an expansion of the framework from Lacina (2006) and her domestic factors are included as control variables. In addition, new control variables such as world regions, and rebel objective are added.

Chapter 3 elaborates on methodology and data issues. After a discussion of the fruitfulness of employing a quantitative approach to the research problem at hand I establish the specific statistical model employed in the study. The various variables are operationalised

and the data sources, some of them recently developed datasets, and the types of data are presented and discussed.

The present study utilises the existence of longitudinal data covering most of the post-Second World War period. These datasets provide the limits to the scope and time-frame of the project. In terms of scope the study will utilise the existence of data on all internal conflicts as defined above. As all datasets provide data for at least the period 1946-2003, this is also the time-frame of this study. Multiple regression analysis is used to identify the transnational factors that help explain the variation in civil conflict severity. Ordinary least squares (OLS) regressions for battle deaths in civil conflicts are calculated in order to assess the effects of each independent variable present in the analytical model.

This is followed by Chapter 4 which reports the results from the statistical analysis. The value and limitations of these findings are discussed. I find that there is indeed empirical support for the expectation that some kinds of transnational support affect civil conflict severity. I also add to the domestic context focused explanation of severity variation by testing additional actor specific variables. I find that conflicts where rebels attain territorial control tend to be more severe. Also, I discover that the relationship between the duration and severity of civil conflicts are more complex than previously understood. The final Chapter 5 concludes with a summary of the main contributions of the present study and identifies roles for future research.

2 Analytical Framework

2.1 Introduction

What shapes the dynamics of civil wars once underway? Why do some civil conflicts remain small in scale while others rapidly develop into wars of extreme severity? In this chapter I confront existing scholarly literature with these and related questions. I do this in order to summarise what we know so far and what this leads us to expect with regards to transnational and other factors affecting internal armed conflict severity.

In the first of three main sections below I briefly map the development of the quantitative study of civil war before I go on to identify shortcomings in this literature. I locate my own study within the tradition through outlining how my study seeks to help address the existing shortcomings. Thereafter, in Part 2.3, I develop an analytical framework for the purpose of this study. Previous research pertaining to civil conflict severity is revisited and I draw on insights from other strands of the quantitative civil conflict literature in order to expand on previous explanations of variation in conflict severity. In particular, theory-building and findings regarding the relationship between certain transnational dimensions and various aspects of civil war are investigated in order to establish hypotheses on the effects of transnational factors on the severity of internal armed conflicts. Finally, Part 2.4 summarises the main arguments and expectations and presents the resulting analytical model.

2.2 The Study of Civil War

It has been noted that the study of civil war has peaked in popularity at the same time as a downward trend in its empirical frequency became visible (Sambanis, 2002:215). Empirically, throughout the 1990s a relatively clear downwards trend in the number of conflicts worldwide was visible. 29 conflicts were recorded in 2002, the lowest number since the mid-1970s. Since then the yearly number of active conflicts have been slightly higher (Harbom and Wallensteen, 2009). In the academic world, in particular since the turn of the millennium research on civil war has proliferated. In this section I briefly revisit important roots of

this stream of literature, before I look at its present characteristics and recent developments and the ways in which my study draws on this.

2.2.1 The Emergence of a Quantitative Approach to Conflict

Good reviews of the literature on civil war can be found elsewhere (Sambanis, 2002; Hegre and Sambanis, 2006) and will not be repeated here. It can nonetheless be useful to identify broader trends in the development of the field in order to locate the present study in the context of classical and recent contributions.

The quantitative study of civil war owes much to Ted Robert Gurr. An important early figure, from 1968 onwards he published extensively on a variety of forms of conflict (e.g. Gurr, 1968; 1970; 2000). His focus on quantitative analyses of national-level measures has characterised the field more generally for several decades. As will be dealt with below, this approach has only recently begun to be seriously challenged (Gleditsch, 2007; Cederman, Gates and Gleditsch, ND).

The emphasis on national-level measures has perhaps most prominently been manifested through central collaborative data gathering projects such as the Correlates of War (COW) project (Small and Singer, 1982). COW, together with smaller auxiliary data projects as well as newer alternative projects like the PRIO/Uppsala Armed Conflict Dataset¹ facilitated the emergence of a research tradition employing quantitative methodology to relate various sociodemographic and political factors to civil and international war (Tarrow, 2007:588).

The importance of these data projects notwithstanding, the recent expansion of work on the relationship between different national-level measures and conflict risk can to a large extent be seen as response to the publication of two central publications at the turn of the millennium. Collier and Hoeffler (2000) framed their analysis around a contrast between 'greed and grievance' as reasons for civil conflict outbreak and found that economic factors rather than political variables were associated with higher conflict risk. While Fearon and Laitin (2003) proceeded from similar microeconomic premises as Collier and Hoeffler, they found that factors other than purely economic ones, in particular mountainous territory, weak non-democratic governments and general political instability, could also significantly

¹ This dataset is discussed in more detail in Chapter 3 on methodology and data.

increase the risk of civil war. More recent work has proceeded in testing the effect of additional variables, employing new measures and data to provide a more detailed understanding of what factors affect conflict risk (see Hegre and Sambanis, 2006). Other studies have also looked at factors affecting conflict duration (e.g. Collier, Hoeffler and Söderbom, 2004; Fearon, 2004; Cunningham, Gleditsch and Salehyan, 2009). However, some significant shortcomings in this literature on civil war have been identified and have only recently begun to be addressed.

2.2.2 Shortcomings in the Existing Literature

My study seeks to address three problems with the traditional research agenda. First, the now extensive and varied quantitative literature on internal armed conflict has so far been surprisingly silent when it comes to what actually happens during the course of a conflict (Tarrow, 2007). The issue of actual violence in a civil war has so far largely remained the domain of qualitative studies. Case studies of individual conflicts are common and can provide detailed knowledge on specific conflict dynamics. Recently, more general qualitative works on violence in civil conflicts have also emerged (e.g. Kalyvas, 2006; Weinstein, 2007). Early quantitative work on variation in severity of wars, on the other hand, has largely been ignored (Richardson, 1948; 1960; Cederman, 2003).

Second, as noted above, countries have been the common unit of observation and the underlying model has been one of the state as a 'closed polity' (Gleditsch, 2007; Salehyan, Gleditsch and Cunningham, 2008:2). Since internal armed conflicts per definition are domestic phenomena, a widespread assumption has been that it is country characteristics that matter with regards to conflict risk and duration. The limited validity of this assumption has been demonstrated in recent research indicating relationships between conflict risk on the one hand and cross-border factors such as transnational ethnic ties, foreign country support for a civil conflict party and neighbouring country conflict on the other hand (Buhag and Gleditsch, 2008; Cederman, Girardin and Gleditsch, 2007; Gleditsch, 2007; Salehyan, 2007; 2008; Salehyan, Gleditsch and Cunningham, 2008; see also Brown 1996).

Third, and related to the treatment of states as isolated entities, is the problem of excessive aggregation, meaning that too little attention has been devoted to sub-national characteristics and actors (Cederman and Gleditsch, 2009; Tarrow, 2007:589). In contrast to

general theories of war which emphasize how conflict must be understood as interaction between two or more parties, large-n cross-national empirical studies of internal armed conflict have tended to ignore the identity of actors involved (Salehyan, Gleditsch and Cunningham, 2008:3). As noted in the case of Fearon and Laitin (2003) above, the focus has been almost exclusively on the government side, while characteristics of the non-state party have not been taken into account. In a special issue of the *Journal of Conflict Resolution* on “Disaggregating Civil War” from August 2009 (see Cederman and Gleditsch, 2009), Cunningham, Gleditsch and Salehyan (2009) call for recognition of civil war as a dyadic phenomenon (see also Harbom, Melander and Wallensteen, 2008).

2.2.3 Addressing Identified Shortcomings

My study is a response to these shortcomings and seeks to contribute to overcome them by building on and combining recent advances in various directions. New insights and innovative measures can often have applicability outside the specific context of the academic sub-field in which it is developed. I will later argue that there is reason to expect this to be the case when it comes to the respective sub-fields of conflict risk and conflict severity as well.

First, the focus of this thesis is how to explain variation in the amount of violence occurring during the course of conflict, framed in the concept of conflict severity. While acknowledging the early contributions of Richardson (1948; 1960) on this issue I build more directly on Lacina (2006) as well as Heger and Salehyan (2007) who employ new data on battle deaths in internal armed conflicts after the Second World War (Lacina and Gleditsch, 2005). I seek to demonstrate that a quantitative approach to what happens during the course of civil war is meaningful. While this cannot and should not replace qualitative work on civil conflict violence, the quantitative study of conflict severity has its own merits and can yield new insights.

Second, I address a shortcoming in Lacina’s (2006) study, an example of the second general problem noted above, in that I look at transnational dimensions in addition to her predominantly domestic independent variables. As is dealt with at length later in this chapter, I establish hypotheses on three specific transnational factors. These are factors that, during the last couple of years, have been shown to have effect on risk of conflict onset and conflict duration.

Finally, I move towards overcoming the third problem, i.e. of excessive aggregation, by looking at certain characteristics of the conflict parties. A central question is to what extent it matters if a non-state party (a rebel group) or the government party gets access to additional resources through transnational linkages. The goal of the insurgents, whether they are aiming for government or limited territorial control, will also be taken into account. These are both specific substantial issues that will be located within the theoretical framework below. For now it suffices to note that they point to the importance of treating civil conflict as a dyadic phenomenon where the particularities of both sides should be considered. In addition, opening the box of the 'closed polity' allows for the inclusion of extra-dyadic actors such as other states and sections of ethnic groups in different countries. It is now time for locating these actors and interactions within the framework of an analytical model.

2.3 A Framework for Explaining Variation in Civil Conflict Severity

How can variation in conflict severity be explained? This section provides an analytical framework for the study incorporating characteristics of the conflict context and central actors. The main focus will be on the role of transnational dimensions in explaining conflict severity since this is the primary area of contribution for this study. Based on theoretical discussions and assessment of previous empirical findings, hypotheses on the nature of three particular transnational factors will be established. First however, it must be emphasised that transnational dimensions can only form a part of a more general explanatory model of conflict severity. Other important dimensions have already been seen in connection with severity of internal armed conflicts.

2.3.1 Non-Transnational Dimensions of Civil Conflict Severity

One approach, of quite obvious significance and very common within quantitative conflict studies, is to look at certain country characteristics. While I have emphasised the shortcomings of treating state units as closed polities, it would be a bigger mistake to exclude the domestic context altogether from an explanatory analysis. One might reasonably expect that such factors as population size, government military capability, the size of the economy, form of government and ethnic and religious polarisation can affect the scale of a civil war in

a country. It has also been put forward that if large portions of a country's territory are relatively inaccessible, this can facilitate insurgency activity. These potential effects were investigated by Lacina (2006) who found that the presence of democracy and ethnic polarisation had a negative effect on conflict severity, but the effects of population, income level, government military quality, proportion of rough terrain and religious polarisation were not significant. In a democracy, the leadership may more committed to minimise the number of casualties in fear of public outcry, leaders might also be less willing to use harsh repression techniques and, finally, democracies feature government structures that may make them better equipped to negotiate and co-opt rebels (Gleditsch, 1999; Lacina, 2006:282). Lacina (2006:287) suggests that an explanation for the unexpected negative effect of ethnic polarisation may be that conflict violence in ethnically homogenous countries can be more indiscriminate and widespread as it is can be difficult to know who is on which side. These domestic variables will be kept and included in the analysis conducted in this study allowing for testing the robustness of results from previous research. The first seven hypotheses are informed by findings from earlier research on severity of internal armed conflicts.

- H1:** Civil conflicts are less severe in democratic than in non-democratic countries.
- H2:** Civil conflicts are less severe in ethnically polarised countries.
- H3:** The severity of civil conflicts is not affected by whether or not a country is religiously polarised.
- H4:** The size of the population in a country does not affect civil conflict severity.
- H5:** Income level in a country does not affect civil conflict severity.
- H6:** Government military quality does not affect civil conflict severity.
- H7:** A country's proportion of rough terrain does not affect civil conflict severity.

One might expect conflict severity to vary between different historical time periods and different parts of the world. Lacina (2006) finds that internal armed conflicts were more severe during the Cold War than after. According to neorealist International Relations theory, the change from bipolar system into something else, either it is a uni-, or multipolar system, represented a fundamental change in world politics (Waltz, 1979, 1993; Wohlforth,

1999). On the other hand, that conflicts have been less severe after the end of the Cold War might be taken as supporting an optimistic view emphasising the spread of liberal factors like democracy and commerce (Hegre et al., 2001; Oneal, Russett and Berbaum, 2003) than with structural and cultural explanations predicting rising anarchy (Mearsheimer, 1990; Kaplan, 1994; Huntington, 1996; Gleditsch et al., 2002:623).

Apart from changes in world politics, developments in military technology through the last half century may also have had an effect on the number of people killed in armed combat. Since both offensive and defensive technology have seen advances, however, the kind of impact to expect from technological advances is not clear. However, Lacina, Gleditsch and Russett (2006) find that the risk of death in battle, whether part of an international or domestic conflict, has been declining after the Second World War. Their results cover international, internal and colonial war but Lacina's (2006) finding that civil conflict severity was lower after 1989 than before prompts the expectation of an overall decline in severity for the last half century.

H8: Civil conflict severity has been declining after the Second World War.

While measures of state strength have not previously been found to significantly affect conflict severity, there might still be variations between different parts of the world. There could, for example, be differences between intrastate conflicts in Africa, Asia and Europe not detected by the more specific domestic context factors mentioned above. The ninth hypothesis expresses the expectation of such variation.

H9: There is variation in civil conflict severity between different world regions.

Another dimension of apparent importance is the duration of a civil conflict. What is the relationship between the duration and severity of conflict? Are longer conflicts more severe or are protracted conflicts typically of small scale? To some extent this is a methodological issue. As conflicts are recorded on the basis of a yearly threshold of battle deaths, another conflict year will automatically mean more severity in terms of overall conflict battle

deaths. The relationship between total conflict battle deaths, i.e. severity and battle deaths per year, intensity, is elaborated upon in Chapter 3.

The role of duration is also a theoretical concern, however. Assuming, for now, that the relationship between duration and severity is positive, an assumption consistent with results from previous research, it is a question if and how other dimensions are related to both of these factors (Lacina, 2006; Heger and Salehyan, 2007). As seen in Figure 2.1, given the peculiar nature of the duration variable, other factors might affect conflict severity either by primarily prolonging or shortening the conflict (Variable Y), impact directly on severity without affecting duration (Variable X) or even have opposite effects on duration and severity (Variable Z). Some reference will be made to these different types of relationships in the theoretical discussions below, but in Chapter 3 it will be argued that it is still warrantable to treat duration as one amongst other independent and control variables in the empirical analysis. Overall, it is expected that severity increases with duration, expressed in hypothesis number ten.

H10: Long-lasting civil conflicts are more severe than shorter conflicts.

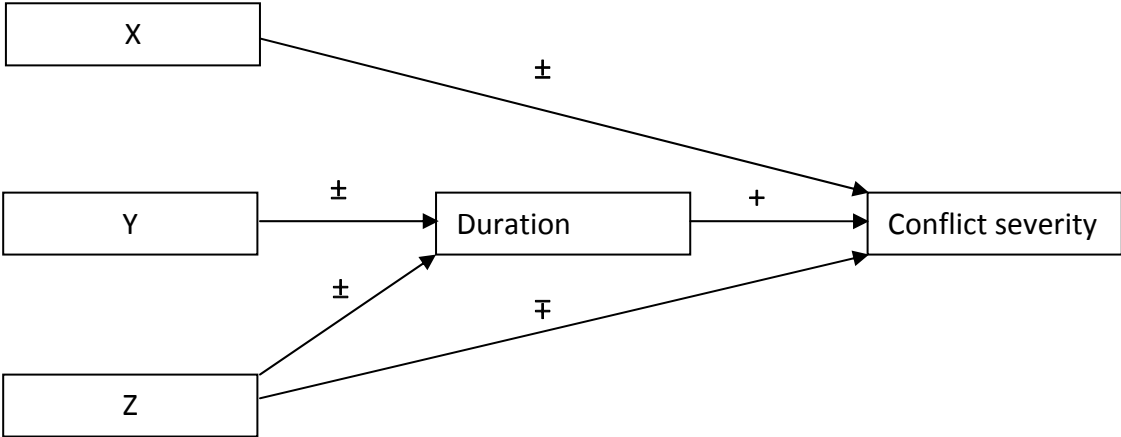


Figure 2.1: Relationships between independent variables, duration and the dependent variable of conflict severity

One category of specific factors that might impact on duration and severity are characteristics of the actors involved in conflict. Keeping in mind the dyadic nature of conflict,

the individual goals, capabilities and identities of the belligerents should be taken into account. Regarding the government side it is generally assumed that its primary goal is to end the conflict as soon and with as few losses as possible, by victory or by making the fewest possible concessions to the insurgents. In some cases it might be that the real preference of the government lies with a continuance of conflict, in order to defend continued repression against minorities or for other reasons, but such hidden agendas are difficult to access and are assumed to be the exception.

When it comes to government capabilities and identity, these factors are to a large extent overlapping with variables on country characteristics such as form of government and military quality and capabilities. As mentioned, Lacina (2006) found that the presence of democracy had a negative impact on severity while her indicator of military quality had a positive but not statistically significant effect. It has also been shown that government coalition size can impact on severity, with smaller ruling coalitions yielding a greater number of battle deaths (Heger and Salehyan, 2007).

On the other hand, one would also expect the military strength of insurgents to be positively associated with conflict severity. While this has been found to be the case, rebel groups who are strong relative to the government tend to feature in shorter conflicts (Heger and Salehyan, 2007; Cunningham, Gleditsch and Salehyan, 2009). This seems to indicate that relative rebel strength is a factor of type Z in Figure 2.1 above, having different effects on duration and severity. More powerful insurgents might be able to achieve concessions or victory quicker than weaker opposition groups but they can also cause more intense conflicts with a high number of fatalities. The issue of rebel group military capabilities is discussed further below as it is central to expectations regarding the effect of transnational factors.

H11: Rebel groups which are strong relative to the government feature in more severe civil conflicts.

Additionally, categorising rebel groups on the basis of identity has been common in studies of civil war (Sambanis, 2002). In practice, however, the viability of defining insurgents as either having an ethnic and/or religious identity or being of a 'non-identity' kind (revolutionary or other) can be questionable as such categories often fail to be completely

mutually exclusive. A distinction based on rebel objective has been put forward as both theoretically and empirically more fruitful (Buhaug, 2006; Buhaug and Gleditsch, 2008). Groups that fight for territorial control, be it autonomy or secession, are usually distinct from rebels aiming to overthrow the government. The former is also more likely than the latter to have a common ethnic identity so there is certainly some overlap with the first type of categorisation, although perhaps not as much as previously assumed (Buhaug, 2006:694). Heger and Salehyan (2007) find that conflicts over territorial autonomy are less severe than conflicts over government control. I investigate the robustness of this finding by testing hypothesis 12. While ethnic identity may not be a feasible basis for categorising rebel groups, it will be argued below that it can be of significance when it comes to increasing one's capabilities through accessing resources from abroad.

H12: Civil conflicts over territory are less severe than conflicts over government.

2.3.2 Transnational Dimensions of a Dyadic Relationship

After thus having recapped the central parts of the explanatory model developed in the literature so far, it is time to move on to the specific contribution of the present study and to open up the black box of the impact of transnational factors on the level of conflict violence. That there is a positive relationship between capabilities and severity functions as a basic assumption for the following reasoning about the effect of transnational factors. On the one hand, access to additional resources can enhance the ability of a conflict actor to conduct violence by enabling arms procurement and recruitment. On the other hand, it has been found that rebel groups emerging in a resource rich context tend to be less dependent on and consequently more detached from the local civilian population and are associated with more widespread and indiscriminate violence against civilians (Weinstein, 2007).

The dyadic relationship between the government and an opposition group are usually highly asymmetric in terms of military and other capabilities. For this reason Cederman, Girardin and Gleditsch (2007) expect that the non-state parties will seek support from abroad whenever this possibility is present. On the other hand, Salehyan, Gleditsch and Cunningham (2008) point out that transnational support is unlikely to come entirely without

conditionalities or expectations. Receiving support from abroad can therefore place limits on the autonomy of a rebel group. While the trade off between autonomy and increased military strength might be a real concern, however, maximising autonomy will often be a luxury that rebel groups cannot afford (Salehyan, Gleditsch and Cunningham, 2008:8).

It has been observed that the typical initial response of the government when rebellion emerges is to resort to repression, while only if the rebel group proves to be resilient, might negotiations be considered as an option (Bapat, 2005). Since transnational sources of resources to insurgents are often more difficult for the government to limit than domestic ones, such channels may be vital for surviving initial repression and thus hindering the conflict from ending early on (Salehyan, Gleditsch and Cunningham, 2008:7). By thus prolonging the conflict, a rebel group's access to additional resources from abroad is also likely to impact on severity of the conflict as this was noted above to be related to duration.

The reliance of insurgents on transnational support may also prolong the conflict in another sense. When the autonomy of the rebel group is limited as outside sponsors get some influence and leverage, conflicts can become more complex and consequently more difficult to resolve. Cunningham (2006) finds that conflicts where multiple actors must approve a settlement tend to last longer than conflicts with few so-called veto players.

The phenomenon of transnational support need not be limited to rebel groups, however. Governments embroiled in civil war may also seek and receive support from outside actors such as friendly governments or neighbours who fear regional instability (Heger and Salehyan, 2007). A similar logic of weighing loss of autonomy against gains in fighting capability can be applicable to the government side in civil wars (Salehyan, Gleditsch and Cunningham, 2008:8). While governments tend to be the far strongest actor in conflict dyads, they may also find that receiving outside support is beneficial, particularly in cases when the rebel group survives initial repression and the conflict persists.

In terms of modelling, the above reasoning implies extending the dyadic framework into a polyadic one where outside actors enter as additional transnational dimensions. While the central twofold relationship between the opposing sides in civil conflict remains of primary importance, the additional elements are also vital for our understanding of the dynamics of civil war (Cederman, Gates and Gleditsch, ND). Figure 2.2 provides an illustration.

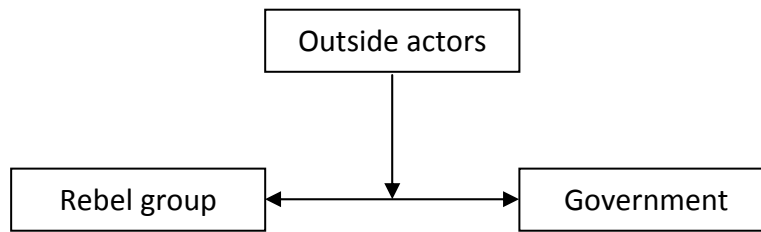


Figure 2.2: A polyadic framework of civil conflict actors

Below, three transnational factors, i.e. ways in which a conflict actor can access additional resources from abroad, are identified and a hypothesised relationship with conflict severity outlined. It will be reasoned that the presence of transnational ethnic ties, support from another state's government and ongoing conflict in a neighbouring state can all be expected to be associated with more severe conflicts.

2.3.3 Transnational Ethnic Linkages

In this section it will be argued that what is termed transnational ethnic linkages can enable rebel groups to access additional resources which in turn can lead to increased conflict severity. Why should this be the case? Many ethnic groups are divided by international borders, in many cases because of how colonial borders were drawn without concern for local context. Ethnicity is an important political issue in many countries, certainly not only in post-colonial societies, and has been identified as an important aspect of many armed conflicts.

There is an ongoing scholarly debate about how ethnicity in general should be understood and particularly regarding its role in conflicts. While insights from social anthropological work have demonstrated how it is the borders between, not the cultural content of, ethnic groups that matters and that ethnicity is socially constructed and is often used instrumentally, primordial views appear persistent (Anderson, 1991; Eriksen, 2002). While quantitative researchers may be well aware of the socially constructed nature of ethnicity, a research approach dependent on information in the form of numbers can often not easily avoid treating actors like objects (Cederman, 2002). This methodological reification of ethnic groups is done out of necessity rather than on the basis of subscription to primordial ideological views. In the following it is assumed that actors with a shared ethnic affiliation are more likely to provide support for each other than other actors, *ceteris paribus*.

There exists theoretical and empirical in addition to anecdotal support for the significance of transnational ethnic ties for internal armed conflict. Starting with an anecdote, in the ongoing conflict in Sudan's westernmost region of Darfur, the rebel group known as the Justice and Equality Movement (JEM) has been able to draw on transnational ethnic ties to increase their fighting capabilities. Much of the rebels' leadership are ethnic Zaghawa, a group that is present in neighbouring Chad as well as in Darfur. This has enabled JEM to access additional resources and allowed for operations across the Chadian-Sudanese border (Flint and de Waal, 2008).

In this way transnational ethnic ties can increase a rebel group's chances of being able to muster both quantitatively more and qualitatively different resources (Gleditsch, 2007:298; Salehyan, Gleditsch and Cunningham, 2008:6). On the one hand, ethnic kin across the border can be a source of extra funds, food, arms and recruits. On the other, it can open safe havens for the insurgents and may even allow them to establish bases outside the conflict zone (Salehyan, 2007; 2008). It is likely that a rebel group with access to additional resources will be better able to withstand government repression and produce a longer and more severe conflict (Salehyan, Gleditsch and Cunningham, 2008).

Effects of transnational ethnic ties can also be of a less tangible nature. For example, it has been suggested that parts of the ethnic group in another country often can be more confrontational as it is less likely to be deterred by the government in the country in conflict (Gleditsch, 2007:298). The psychological and motivational effect of getting material and moral support from ethnic kin abroad could be significant.

A related approach to looking at traditional settlement patterns of ethnic groups across countries is to take into account more recent flows of refugees and migrants. In the Sri Lankan conflict for example, it has been documented how the Liberation Tigers of the Tamil Eelam (LTTE) have been able to muster significant resources from the Tamil expatriate community worldwide (Guneratna, 2003; Human Rights Watch, 2006). Other examples include Irish Americans supporting the Irish Republican Army (IRA) and Albanians in Germany supporting the Kosovo Liberation Army (KLA) (Samabanis, 2002:232). While some work has been done on the effect of diaspora and refugee communities on the risk of civil war onset, lack of readily available data means that this factor falls outside what this study can take into account (Collier and Hoeffler, 2000; Fearon and Laitin, 2003; Gleditsch and Salehyan, 2006).

The types of transnational ethnic linkages that will be dealt with here, however, i.e. based on traditional settlement patterns, have been found to have significant effect on certain aspects of civil conflict. Generally, transnational ethnic linkages are positively associated with risk of civil war (Gleditsch, 2007). More specifically, conflict onset has been found to be more likely when there are ethnic ties to groups in a neighbouring conflict and when large excluded ethnic groups have transnational kin in neighbouring countries (Buhaug and Gleditsch, 2008; Cederman, Girardin and Gleditsch, 2007). Saideman (2002) found that transnational ethnic ties provide better indicators for transnational support to groups than vulnerability and relative power. There are also empirical results indicating that countries with shared ethnic ties to actors in a civil war are much more likely to intervene in ongoing conflicts (Austvoll, 2005). This could plausibly lead to more severe conflicts, although it could also possibly contribute to ending the conflict more quickly and thus limit the number of battle deaths. The issue of outside intervention is dealt with more extensively below.

Overall, the above considerations provide reasons for expecting the presence of transnational ethnic linkages to be associated with more severe internal armed conflicts. This is expressed in hypothesis 13.

H13: Transnational ethnic ties increase the potential for external support for insurgencies and consequently lead to more severe internal armed conflict.

2.3.4 Foreign Support

Transnational ethnic ties are not the only way in which armed groups opposing the government can access additional resources. Other governments and outside actors can find it in their interest to support one of the sides in an internal armed conflict in another country, sometimes amounting to war by proxy. This was a central aspect of the Cold War, as was seen in e.g. Vietnam and Zaire (now the Democratic Republic of Congo, DRC), but also later in e.g. Sudan and the DRC.

Previously, considerable scientific attention has been given to the effect of foreign intervention on civil conflict duration (e.g. Elbadawi and Sambanis, 2000; Regan, 2000; 2002; Collier, Hoeffler and Söderbom, 2004). After the Cold War, ambitions were initially high regarding the abilities of the international community to intervene and end destructive civil

wars. While ambitions were lowered during the course of the 1990s, in particular after the apparent failure of the US intervention in Somalia, public calls for outside intervention to stop human suffering has continued, as seen recently in relation to the Darfur conflict amongst others. Results from empirical research seem to warrant less optimism, however, as interventions have been found to generally prolong civil conflicts (Balch-Lindsay and Enterline 2000; Regan, 2002).

An underlying assumption in much research on the role of interventions has been that this action by a third party is exclusively motivated by a wish to promote peace by ending the conflict. The possibility that the intervener(s) may want to influence outcomes of the conflict in favour of its own preferences has tended to be disregarded (Salehyan, Gleditsch and Cunningham, 2008; e.g. Regan, 1996). In fact, more often than not interventions favour one of the sides in the conflict over others. Biased interventions have been found to be more efficient in ending civil conflicts than non-biased ones (Regan, 2002). Heger and Salehyan (2007) and Weinstein (2007:307) find that such interventions tend to lead to increased conflict severity.

Recently, it has been emphasised that although third party intervention certainly is an important factor to consider in relation to civil war, there are many other ways in which a foreign government can support a conflict actor that may justify more attention. Military resources can be supplied to a conflict actor to an extent that does not amount to intervention, and support of a non-military kind, such as financial aid, can be made available. Another important type of support is when insurgents are allowed by a state neighbouring the conflict state to operate out of its territory. Rebel groups operating across international borders are a common phenomenon in civil conflicts, attesting to the need to pay attention to the transnational dimensions of internal warfare (Salehyan, 2007; 2008).

The presence of rebels on the territory of neighbouring states need not always take place with the consent of the host country government, however. Conflicts are found to in general take place close to international boundaries and many places in the world borders are not heavily monitored and are effectively porous (Buhaug and Gates, 2006). On the other hand, whether or not the government of the host territory has given its consent to the rebels' presence is not assumed to be of importance to the effect on conflict severity. Anyway, the ability of a rebel group to transgress borders is likely to increase their capacity to

resist government repression, thus prolonging the war and potentially increasing its severity (Cunningham, Gleditsch and Salehyan, 2009).

Looking only at formal military intervention may thus severely underestimate the range of support provided to actors in internal armed conflicts. Salehyan, Gleditsch and Cunningham (2008) break new ground when they see this more varied range of support in relation to conflict duration and termination. In the present study, I follow this more differentiated approach to foreign support in order to expand on the insights offered by previous research which has only addressed formal interventions (Heger and Salehyan, 2008; Weinstein, 2007).

A note of caution is in place regarding government to government support, however. The direction of causality regarding the relationship between this kind of support and conflict severity can be ambiguous (Lacina, 2006:285, fn. 15). On the one hand, extra counterinsurgency capabilities for the government could lead to more battle deaths. On the other hand, provision of such support from a foreign state could also come as a response to high levels of severity or other conflict characteristics strongly correlated with severity such as rebel success and advancement against the government. This might be an issue in a study by Heger and Salehyan (2007) who choose to include an indicator of foreign intervention without providing a discussion of direction of causality.

The direction of causality should be clearer regarding support for rebel groups. It seems reasonable to assume that the decision regarding whether or not to support an insurgency in a foreign country is much less influenced by whether or not the specific conflict there is already of high severity. A foreign government or constituency which is hostile to the government involved in a conflict would probably be about as likely to provide support for the rebels whether or not the conflict is severe. The level of support, however, could maybe be another matter. I return to this endogeneity problem in Chapter 3. The general expected effect of transnational support on civil conflict severity is expressed in hypothesis number 14.

H14: In a country experiencing internal armed conflict, the conflict will be more severe where one or more conflict parties receive foreign support.

2.3.5 Neighbouring Conflict

In contrast to the two transnational factors discussed above the factor to be presented here is more of a contextual variable than dealing with specific actor behaviour. In this section I address if and how the level of violence in a conflict may be affected by the presence of conflict in one or more neighbouring countries.

It has been observed that internal armed conflicts have a tendency to cluster geographically in what has become known as conflict regions. Sometimes it may seem like neighbouring countries just happen to experience conflict at the same point in time, perhaps owing to similar characteristics that are known to heighten the risk of conflict. At other times internal armed conflicts are clearly linked through regional conflict dynamics.

Some recent examples of regional conflict zones include clusters of conflicts in Central Africa and South Central Asia. The histories of conflict in the Democratic Republic of Congo (DRC, formerly Zaire), Rwanda and Uganda are linked at several points. The leadership in Rwanda remains concerned about the rebel group known as the Democratic Forces for the Liberation of Rwanda (FDLR) which is active in eastern DRC and to some extent represents continuity from the Hutu militia active during the 1994 Rwandan genocide. The Rwandan government has twice used this as a justification for invading the DRC together with the Ugandan government, and more tacitly Kigali has supported Tutsi rebels in the North and South Kivu, the DRC's easternmost regions (International Crisis Group, 2005ab; Tull, 2007). In the last couple of years especially, the Lord Resistance Army (LRA) rebel group opposing the government in Uganda has been increasing its activity in the DRC, as well as conducting raids in South Sudan and the Central African Republic (CAR) (International Crisis Group, 2008).

Sudan and the CAR, together with Chad, constitute another interlinked conflict zone where rebels from Darfur in Sudan have traversed the borders to Chad and the CAR while rebels from north eastern Chad have operated across the border to Sudan (Flint and de Waal, 2008; Prunier, 2007; Rolandsen, 2007). In Asia moreover, the increasing presence and levels of activity of Taleban and related militant groups in Pakistan's border regions with Afghanistan is of increasing concern both to the respective governments of the two countries and to NATO forces operating in Afghanistan (International Crisis Group, 2009).

While the qualitative case study literature has provided detailed histories and comprehensive knowledge of specific conflict zones and individual dynamics, the quantitative literature has mainly approached conflict regions in relation to risk of conflict onset. The focus has been on spread of conflict once under way in one country to neighbouring states. Some authors have found it necessary to differentiate between related concepts of contagion, diffusion and escalation (Buhaug and Gleditsch, 2008:217, fn. 4; Sambanis, 2002:226). Most of them share the commonality, however, that they argue that 'bad neighbourhoods' and poor relations between states in a region can increase the risk of civil war (e.g. Lake and Rothchild, 1998; Ayres and Saideman, 2000; Gleditsch, 2007; Buhaug and Gleditsch, 2008).

Empirically it has been found that the tendency of civil conflicts to cluster geographically is not simply a consequence of regions of countries with similar characteristics (Buhaug and Gleditsch, 2008). As several studies have found that the risk of conflict increases when a neighbouring conflict is underway, a genuine contagion effect appears to be at work. This could be a consequence of a number of different mechanisms. Arguably, many of the same factors can be applied to the relationship between the severity of a conflict and the presence of conflict in a neighbouring country.

Some of the dynamics that can contribute to the spread of civil conflicts are related to factors that have already been mentioned in above sections. Cross-border ethnic ties can again be a relevant factor by facilitating flows of resources like military equipment and relevant knowledge between two conflict zones which can increase rebel group capacity and thus conflict severity.

While it was mentioned above that support from ethnic kin in the diaspora will not be considered specifically in this study, the potential effect of refugee flows to neighbouring countries experiencing conflict can be detected as part of an analysis of the relationship on severity of conflict neighbours. Salehyan and Gleditsch (2006) argue that while refugee flows appear as a consequence of conflict and that the majority of refugees do not engage in violence, their presence in neighbouring countries can nonetheless facilitate spread of arms, combatants and ideologies conducive to violence. They find evidence of the presence of refugees from neighbouring countries increasing the risk of conflict outbreak (see also Buhaug and Gleditsch, 2008).

A similar reasoning would warrant the expectation of an increase in severity of conflicts once underway. Ongoing civil war in neighbouring countries can also make it easier for

rebel groups to operate across international boundaries, as seen in Central Africa. In Liberia and Sierra Leone, moreover, warlords were able to control and exploit resource rich territory of both sides of the border (Buhaug and Gleditsch, 2008:220). The sum of these expectations is expressed in last hypothesis.

H15: The severity of internal armed conflict is positively associated with conflict in a neighbouring country.

2.4 Summary

This chapter has located the present study within the existing quantitative literature on civil war. Existing shortcomings in this literature and ways of addressing them has been identified. Finally the bulk of the chapter has been devoted to establishing an analytical framework for the purpose of this analysis. While important progress has been made regarding explaining variation in conflict severity, limited attention has been paid to the role of transnational dimensions in particular.

It has been argued that transnational factors, in addition to domestic contextual and actor-specific factors, should be part of the analytical framework. The framework illustrated in Figure 2.3 below helps address the three problems identified early in this chapter. By having civil conflict severity as the dependent variable, the focus is shifted from risk of conflict outbreak to actual during-conflict processes. Further, while the problem of excessive aggregation may never be fully overcome in quantitative studies it can be reduced by including independent variables on the characteristics of conflict actors. Such variables also point to the dyadic nature of conflict. The focus on transnational variables, finally, is a response to the shortcomings associated with viewing the state as a closed polity where only domestic factors and processes matter. Internal armed conflicts have been found to have important transnational dimensions and it appears reasonable to expect this to have an impact on severity.

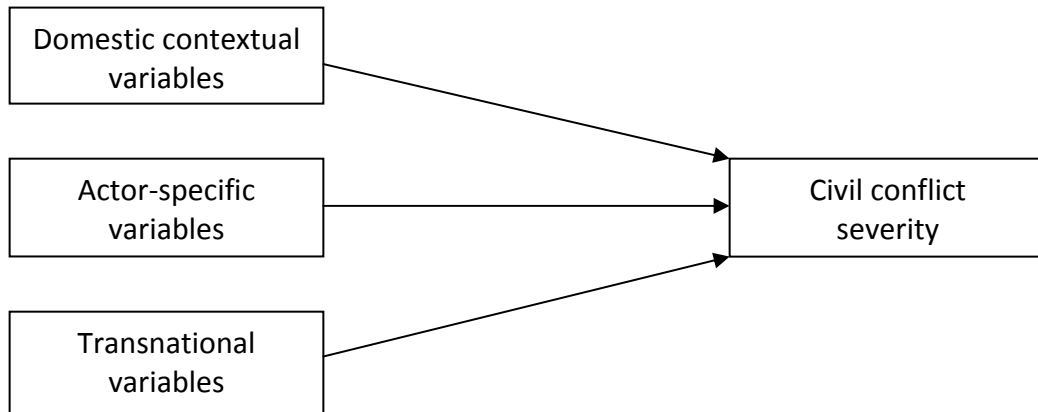


Figure 2.3: Types of factors affecting conflict severity.

In the above sections discussing the impact of each of the three transnational factors, the reader may have noted some overlap between them. For example, ethnic ties and transfer of arms and knowledge figure in all three. This observation notwithstanding, they are not completely overlapping and all contain a core reasoning that is not shared with the others. Consequently they all warrant inclusion in the analytical framework. In the next chapter this model is operationalised and the methodological approach outlined.

3 Methodology and Data

3.1 Introduction

After having achieved establishing a theoretical framework the study in Chapter 2, this chapter will consider issues concerning methodology, operationalisation and data collection. How can one determine what factors actually impact on conflict severity? How can one tell which is more important? These are the kinds of practical questions with which the present chapter is concerned. I will argue that a quantitative approach is appropriate for answering the research question presented in Chapter 1.

Before dealing exclusively with practical concerns, however, it can be useful to review some of the foundations of this kind of study. The first part below has a threefold structure. The first two sections, 3.2.1 and 3.2.2, provide a discussion of how the present study, and the research tradition of which it forms part, relates to certain philosophy of science positions. In the third section, the merits and limitations of quantitative methodology are provided in summary and its applicability to the subject matter of this study is discussed. Part 3.3 presents the specific methodology employed in this investigation and some potential problems are considered. Thereafter, in part 3.4, details of operationalisations of each variable from the analytical model developed in Chapter 2 are provided. Sources of data are presented and discussed. In the final Part 3.5 I briefly discuss the benefits and drawbacks concerning the use of very recently developed datasets and a final table summarises the full set of operational variables.

3.2 The Quantitative Approach to Civil Conflict and Conflict Violence

While social science researchers seldom legitimate their practices with reference to the philosophy of science it is clear that “[a]ll inquiry begins from certain premises, and understanding the basis of these is an essential part of inquiry” (Wight, 2002:26). To some extent, choice of methodology is influenced by philosophical premises. Before dealing with the practical challenges regarding statistical modelling and analysis, therefore, it can be worthwhile

to take a step back and have a quick view of the underlying premises of the research tradition within which this study fits.

3.2.1 Positivist, Problem-Solving and Rationalist Research

The present study exemplifies a quantitative approach to conflict research. As was made clear in the previous chapter this is an established field of analysis. The literature saw its first contributions about four decades ago and has experienced an explosive growth since the turn of the millennium (Tarrow, 2007). It can be observed that the field is today located squarely within the mainstream of social science research (Checkel, 2008a:5). As such, typical contributions can be said to represent positivism, problem-solving theory and rationalism (Austvoll, 2005:42-3). In the following paragraphs I take a closer look at each of these labels before commenting briefly on the choice of approach for this study.

For the most part of the modern history of social science, positivism has been the dominant philosophy of science (Smith, 1996). Indeed, the positivist approach has, for many of its followers, been synonymous with a scientific approach (Wight, 2002). Positivism can be described in terms of four characteristics in particular, namely (i) the use of deductive reasoning, (ii) a commitment to empirical verificationism, (iii) an emphasis on the distinction between theory and observation, and, finally, (iv) a reliance on the Humean theory of causation as correlation (Lloyd, 1993 cited in Smith, 1996:15).

The so-called behavioural revolution in Political Science of the 1950s and 1960s served to make the presence of positivism and commitment to epistemological empiricism even more prominent (Smith, 1996). A greater emphasis on quantification followed from adoption of methodology from the natural sciences (Wight, 2002). The large-n tradition in conflict research owes much to these developments. While the literature is largely silent on its epistemological foundations, its practical adherence to basic tenets of positivism is clear (Checkel, 2008ab; Sambanis, 2002; Tarrow, 2007).

Cox (1981), a declared critical theorist, introduced the dichotomy between problem-solving and critical theory. While problem-solving theory takes the present 'reality' as given and has as its only practical ambition to better the world's functioning, critical theory asks how the prevailing world order came about and addresses the potential for change (Cox, 1981). While arguing that there is a need for critical theory, however, Cox (1999:392-3;

2002:xxii) does not disregard the merits of problem-solving theory but rather present them as complementary (see also Leysens, 2008:9; Sinclair, 1996:6). The mainstream civil conflict literature falls within the category of problem-solving theory as the workings of social relations are not normally questioned while the focus is on explaining existing empirical phenomena (Austvoll, 2005:43).

Important contributions to the study of civil war at the turn of the millennium were grounded in microeconomic theory (notably Collier and Hoeffler, 2000; Fearon and Laitin, 2001). Also earlier work from the Political Science tradition built on rationalist assumptions, explaining rebellion in terms of political and economic grievances (Sambanis, 2002; e.g. Gurr, 1970; Tilly, 1978). The social-theoretical approach of rational choice has had a continued presence in the field (Checkel, 2008b; Tarrow, 2007). Rational choice, or rationalism, assumes that actors with a given set of interests will choose a course of action that involves the least costs and the greatest benefits (Snidal, 2002). Much theoretical reasoning around the behaviour of actors in civil war relies on this rationality assumption. Some studies have sought to explain participation in insurgencies based on a separation between incentives of a 'greed' versus 'grievance' type (Collier and Hoeffler, 2000; 2004). Others have considered the rational strategic calculations of conflict actors such as for a rebel group whether or not to seek outside support and for an outside power whether or not to intervene (Cunningham, 2006; Cunningham, Gleditsch and Salehyan, 2007; Regan, 2002).

3.2.2 The Premises of the Present Study

The present study fits into the tradition examined above in that it responds to developments in this literature, identifies shortcomings that are problematic based on traditional premises and seeks to address them within this framework. In that sense, I am entering a game already in play and choose to adhere to the rules which have been established. It follows from this choice that the study fits into the categories of positivist and problem-solving research, but rational choice theory is not emphasised here.

With regards to rationalism, in Chapter 2 reference was made to what would be the expected rational, self-seeking behaviour by conflict actors, e.g. seeking support from abroad when this is deemed beneficial. However, it is certainly not assumed that actors have anything like perfect information about the conflict situation and context. Warzones are in-

herently messy places where information is in short supply and short-term choices may turn out to be counterproductive in the long-term (Kalyvas, 2003). While the costs and benefits of seeking help from an outside actor, such as losing autonomy versus acquiring more capabilities, may sometimes be carefully weighed against each other by the rebel leaders before arriving at a rational decision, this certainly need not always be the case. The presence or absence of such rationality is also not vital to the theoretical underpinnings of this study and they will not be tested. The empirical starting point for this study is rather that conflicts vary in severity, transnational factors are sometimes present and it has been hypothesised that these phenomena may be related.

The choice of employing quantitative methodology may seem to flow naturally from positivist, problem-solving and rationalist premises. However, it is certainly possible to do case-study work based on the same premises. Indeed, much qualitative work on civil wars can be regarded as positivist (Checkel, 2008b; see Weinstein, 2007 for a prominent recent example). For the present project, this methodological choice is rather a strategic one in that it is best fitted for answering the research question presented in Chapter 1. The more general, underlying question that this study engages with is 'what explains the variation in conflict severity?' The ability of statistical methodology to draw inferences from analysis of a large number of cases thus makes it well suited for this task. Before moving on to the specific benefits and limitations of quantitative methodology, however, some cautionary remarks about the limitations pertaining to positivist, problem-solving and rationalist science in general are in place.

While this study follows the mainstream approach to social science it does not argue for a disregard of the criticism levelled against positivism. Rather such criticism serves as a cautionary note on the limits to this approach to social science. While philosophical stances like post-positivism and post-structuralism directly challenge the foundations of positivism, however, other critical approaches do not necessarily discard the usefulness of a positivist approach to science. Wight (2002:33) observes that some critical theorists do not dispute the validity of positivism as a philosophy of science but primarily seek to go beyond it in terms of emancipatory potential (see also Morrow and Brown, 1994). As mentioned, Cox states explicitly that his promotion of critical theory does not preclude the usefulness of so-called problem-solving research aimed at addressing problems within the existing world or-

der rather than aiming to contribute to a change in world order. Habermas (1988) also considered positivist research as a legitimate component of social enquiry.

That being said, constructivism's increasing presence in international relations theory, for example, may point to future change in mainstream forms of inquiry. An increasing popularity of mixed-methods research and an emphasis on causal mechanism rather than mere correlation could be signs of such a development (Checkel, 2008ab). This study, however, limits itself to employing new theoretical insights and new data to advance the quantitative study of civil war severity, in itself a sub-field which has only existed for a few years.

3.2.3 Benefits and Limitations of Employing Quantitative Methodology

Methodologically, statistical analysis, or econometrics, offers several benefits. Firstly, it facilitates generalisation about an extensive universe of cases. This allows researchers to answer broad questions about general trends. Given that the same causal 'story' is stable throughout the population, econometrics allows researchers to draw systematic and precise inference from a large number of observations (Cederman and Girardin, 2007: 173). The causal reasoning underlying the hypotheses presented in the previous chapter is expected to be equally valid across the population of civil wars after the Second World War. While inference based on a case study or comparison of a few cases is also possible, the generality such results will necessarily be more limited (Landman 2003:34).

Secondly, statistical packages report precise figures for estimates of effects after controlling for other variables in the model. The relative strength of individual effects can thus be compared. The precise probability that a specific relationship between an independent and the dependent variable is equal to zero in the population is also available providing a detailed picture of the certainty of inferences (Wooldridge, 2009).

As a quantitative approach facilitates generalisation about statistical correlations that are valid for an extensive universe it is arguably useful for answering questions like the one guiding this research. Battle deaths can be counted and the presence of factors like outside support for rebels and ongoing neighbouring conflicts detected and quantified. Extensive data availability can enable inclusion of all or almost all cases of the phenomenon in a defined time period. Precise results allow for easy comparison with previous studies employing

a similar operationalisation of the dependent variable (i.e. Lacina, 2006; Heger and Salehyan, 2007).

While a quantitative approach to civil conflict severity is arguably fruitful, its strengths can only be comprehensively gauged when one is aware of its limitations. Statistical models are correlational and can themselves neither uncover or nor empirically demonstrate causal mechanisms (Pindyck and Rubinfeld, 1998:74). Hypotheses grounded in theory establishing temporal priority of changes can, however, be strengthened (Stinchcombe, 1968:34). Quantitative studies also lack the ability to provide the detail and descriptive richness which is possible in studies of one or a few cases. Qualitative approaches are thus more suitable for answering more narrow questions about a small number of units (Landman, 2003).

Methodologically, there are also challenges concerning the reliability and validity of operationalisations of central concepts. It is important to note that the conclusions drawn from statistical findings in a strict sense are only valid for the variables in the way they were operationalised in that specific study (Hellevik, 2002). The validity and reliability of collected data should be carefully considered.

3.3 The statistical Model

The hypotheses presented in Chapter 2 will be tested using linear regression. Ordinary least squares (OLS) regression analysis is suitable since the dependent variable is a continuous one. OLS is the ‘industry standard’ when it comes to statistical analysis in the social sciences and has also previously been applied in studies of conflict severity (Heger and Salehyan, 2007; Lacina, 2006; Wooldridge, 2009). As I have no prior expectations about the true functional form in the data, linear OLS is useful as a best first order approximation of any true functional form (Heger and Salehyan, 2007:398, fn. 17). The expectations outlined in Chapter 2 are expressed in the following model:

$$\begin{aligned} severity = & \beta_0 + \beta_1 ethlink + \beta_2 fsupp + \beta_3 nconf - \beta_4 regime - \beta_5 ethnpol \\ & + \beta_6 relpol + \beta_7 pop - \beta_8 gdp - \beta_9 milqual + \beta_{10} terrain + \beta_{11} robject \\ & + \beta_{12} duration + \beta_{13} rstrength + \beta_{14} wregion + \beta_{15} time + u \end{aligned}$$

where β_0 is the intercept or constant, the β_k s are the coefficients on two groups of independent variables and u is the error term. Regarding the independent variables, β_1 through

β_3 are coefficients on the transnational explanatory variables, namely transnational ethnic linkages (*ethlink*), foreign support (*fsupp*) and neighbouring conflict (*nconf*). β_4 through β_{15} are coefficients on control variables, many of which are replication variables included from previous studies of civil conflict severity (Lacina, 2006; Heger and Salehyan, 2007). These variables are regime type (*regime*), ethnic (*ethnpol*) and religious polarisation (*relpol*) in the country, population size (*pop*), size of the economy (*gdp*), state military quality (*milqual*), proportion of rough terrain (*terrain*), objective (*robjct*), duration of the conflict (*duration*), rebel strength (*rstrength*), world region in which the conflict takes place (*wregion*) and change over time (*time*). While it was discussed in Chapter 2 how there could be different causal relationships between certain independent variables and duration and severity, duration is here included as one among a set of control variables. In this way, the individual effects of independent variables can be arrived at after controlling for duration (and all the other variables).

Under what in econometrics is known as the Gauss-Markov assumptions the OLS estimator is the best linear unbiased estimator. This means that OLS estimators are linear functions of the data on the dependent variable which are equal to the population values and feature the least variance. Problems arise, however, when any of these underlying assumptions are violated.

For the OLS estimators to be unbiased, i.e. being equal to the population values, all variables that belong to the true population model must be included in the statistical model (Wooldridge, 2009:89). If an independent variable which affects the dependent variable is excluded from the analysis, the estimators on the included variables will be biased unless there is no correlation between the variable that is omitted and those that are included. I have argued that this problem might have affected Lacina's (2006) results since variables on transnational factors, and also other actor-specific variables, are not taken into account. Adding more variables to the analysis reduces the risk of endogeneity, meaning that one or more variables are correlated with the error term.

The Gauss-Markov assumption of homoskedasticity, meaning that "[t]he error u has the same variance given any values of the explanatory variables" (Wooldridge, 2009:94) is in a strict sense often violated in data used in applied work. When heteroskedasticity rather than homoskedasticity is present, estimators of variances, $\text{Var}(\hat{\beta}_j)$, are biased, in turn affecting our ability to draw valid inferences. Fortunately, statistical software offer heteroskedasticity-

robust procedures which produce valid estimators for large sample sizes irrespective of whether the errors have constant variance (Wooldridge, 2009:267; White, 1980).

OLS also requires that no one independent variable present in the model is a perfect linear function of another independent variable, i.e. perfect multicollinearity. This is not a practical problem as including this kind of variable would not add value to the analysis. A related problem is that of non-perfect multicollinearity. High correlations between independent variables do not violate the Gauss-Markov assumptions but can be a problem in that they lead to high variance. While one cannot specify precisely how much correlation between independent variables is 'too much', some multicollinearity diagnostic measures exist. The most common type of statistics for individual coefficients is the variance inflation factor (VIF) which for the coefficient j is

$$VIF_j = 1/(1 - R_j^2)$$

where R_j^2 is the value of R-squared from the regression of the independent variable x_j on all the other independent variables. A rule of thumb is that VIF_j should not be higher than 10 (Wooldridge, 2009:99).

Yet another Gauss-Markov assumption requires the sample to be a product of a random selection from the population (Wooldridge, 2009:84). Violation of this assumption is often a problem in conflict research because certain countries "select themselves" into conflict (Heger and Salehyan, 2007:398). An entire set of the conflict literature is devoted to explain outbreak of civil war as something else than a random occurrence (Sambanis, 2002).

As many of the hypotheses established in Chapter 2, among them the expectations regarding the effects of transnational factors, were based on findings from the conflict onset literature, it is certainly conceivable that conflict severity and conflict onset are not independent phenomena. For example, external funding for rebels may not only increase their fighting capabilities during the conflict but may sometimes even be a prerequisite for them being able to launch an armed revolt in the first place. A sample only including observations of conflict, excluding all cases of non-conflict, will thus be suffering from sample selection bias (Wooldridge, 2009:608).

Strictly, therefore, the non-randomness of the sample selection process should be corrected for by including a selection bias term obtained from a preceding analysis of conflict

onset (Wooldridge, 2009:610). This is sometimes (Heger and Salehyan, 2007) but certainly not always (Lacina, 2006; Weinstein, 2007:307) done in existing work on civil conflict severity and it is not common in studies of conflict duration (e.g. Cunningham Gleditsch and Salehyan, 2009). The present study limits itself to analysing the actual occurrences of civil war. It is assumed that the most relevant cases to consider in the present analysis are those in which conflicts broke out, not all other counterfactuals where conflict could have broken out but was avoided.

3.4 Indicators and Data

Several of the data sources used to compile the dataset analysed in Lacina (2006) have been updated since the publication of her study. Most importantly the Battle Deaths Dataset (BDD) has been updated and extended and the Uppsala/PRIO Armed Conflict Dataset (ACD) has seen some changes in terms of conflicts listed and active years recorded (Harbom, Melander and Wallensteen, 2008). For the purpose of the present study a new dataset has been compiled based on updated sources. The threshold for inclusion for both the ACD and the BDD, and consequently for this study, is 25 battle deaths per year (Gleditsch et al., 2002; Lacina and Gleditsch, 2005).

The ACD records years of active conflict as belonging to the same conflict even in cases where there has been peace (or at least a lull in fighting) for several years in between (Gleditsch et al., 2002). For example, the first conflict recorded in the ACD took place in Bolivia and is coded as active in three different years: in 1946 when the Democratic Anti-Fascist Front (FDA) organised and overthrew the sitting government, again in 1952 when the National Revolutionary Movement (MNR) party took up arms after an election where they won a majority was annulled and finally in 1967 when the Bolivian government faced a leftist insurgency organised by Ernesto 'Che' Guevara (Salehyan, Gleditsch and Cunningham, 2009b). In line with previous studies I code these and other cases of non-consecutive conflict years as separate conflicts (Lacina, 2006; Heger and Salehyan, 2007).

In total, the resulting dataset contains 309 observations conflicts starting between 1946 and 2003, as compared to Lacina's (2006) 114 and Heger and Salehyan's (2007) 242, both for the time frame 1946-2002. The time frame is restricted by availability of data on

transnational factors. The included conflicts are listed in Appendix 1.² The reported value of *N* for the various regression analyses will, however, be somewhat smaller due to missing data on other variables.

3.4.1 Conflict Severity

The operationalisation of conflict severity was to a large extent provided when the concept was discussed in Chapter 1. The BDD provides data on yearly battle or combat deaths³ for each conflict recorded in the ACD (Lacina and Gleditsch, 2005). A low and high in addition to a best estimate of battle deaths are provided. Following common practice in the literature, the best estimate will be employed to test the hypotheses while the alternative estimates allows for testing the robustness of the results. Numbers reproduced in the text are also best estimates unless otherwise stated.

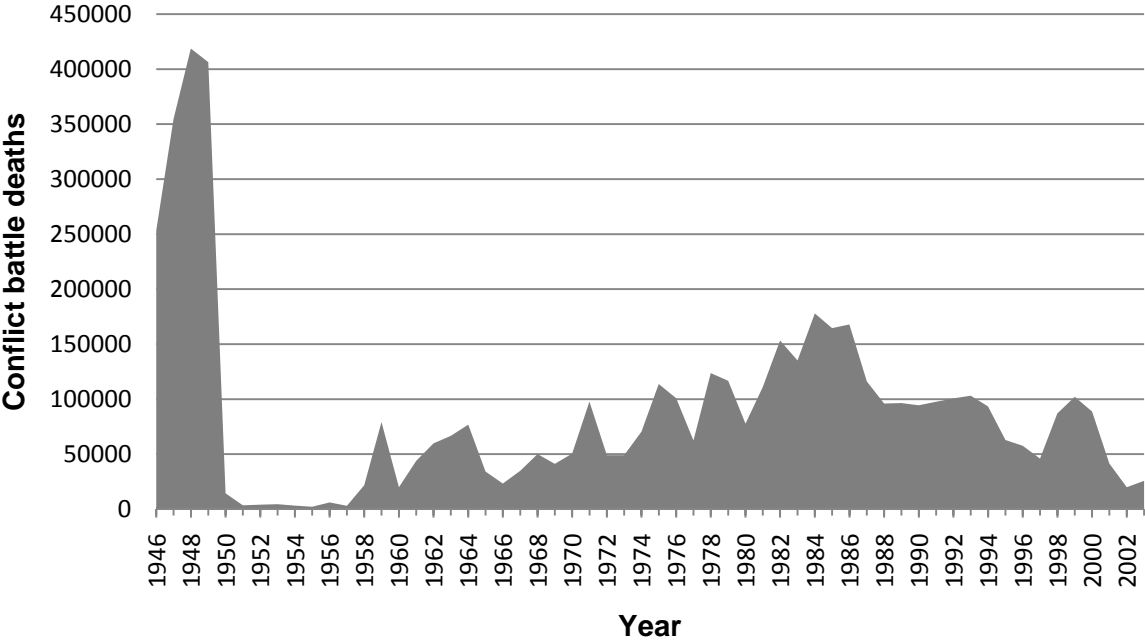


Figure 3.1: Number of battle deaths per year, 1946-2003

Figure 3.1 graphs the global yearly distribution of battle deaths after the Second World War. The variation in civil conflict fatalities per year is evident. The difference be-

² The BDD has not been updated in accordance with the changes made in the ACD Version 4-2008. Conflict years that have been removed from the ACD since BDD Version 2.0 (latest) are not present in my dataset. However, there are not available data on battle deaths for years that have recently been added to the ACD. These years are thus not included in my dataset either.

³ Combinations of battle/combat deaths/fatalities are used interchangeably.

tween the late 1940s and early 1950s is particularly striking. Thereafter, each decade saw an increase until the trend turned after the mid-1980s, only to see a spike before the turn of the millennium and then a new decline at the end of the period. These changes with time seem to warrant controls for time periods in the analysis, something I return to below.

While the graph in Figure 3.1 reveals some interesting trends, however, one should keep in mind that the unit of observation here is not one of conflict years, but individual conflicts, to which I now turn. Since the threshold for including a conflict in the ACD is 25 battle related fatalities per year, this is also the lowest possible value recorded in the BDD. For a total of 14 conflicts appearing in my dataset the best estimate is 25 battle deaths for the one active year recorded. While Lacina (2006:278), without stating her reasons, chooses to exclude all conflicts that did not cause at least 900 battle deaths in total, Heger and Salehyan (2007) do not operate with such a cut-off value. I have chosen to include all conflicts in order to have as much variation in the dependent variable as possible.

While variation in values is beneficial for statistical purposes, the other end of the scale can offer theoretical challenges in terms of influential values or outliers. The most deadly conflict in the dataset is the Chinese Civil War (1946-1949) which caused a total of 1.2 million conflict fatalities while the second (Afghanistan 1978-1988) and third (Cambodia 1967-1975) most severe wars produced 480,000 and 250,000 battle deaths respectively. Figure 3.2 illustrates the extreme skew in the number of conflict battle deaths. The vast majority of conflicts, 232 of 309 or 75 percent, totalled less than 10,000 battle deaths.

Such variation might lead one to question the comparability of these different events. On the other hand, previous research has found wars to be a so-called power law distributed phenomenon, meaning that while small scale events are common, occurrences become gradually rarer with increasing scale (Richardson, 1948; Cederman, 2003). In Chapter 1 I argued theoretically for the treatment of small internal armed conflict and large civil wars as basically the same kind of phenomenon. Statistically, that small and large events are consistent with a single underlying distribution can be interpreted as support for not treating them as qualitatively different (Clauset, Young and Gleditsch, 2007:59). Methodologically, the fact that the absolute values on a variable are far from being normally distributed is remedied by using the natural logarithm of the number of battle deaths, as is common prac-

tice (Lacina, 2006; Heger and Salehyan, 2007).⁴ This also allows for interpretation of the results presented in Chapter 4 in percentage terms.

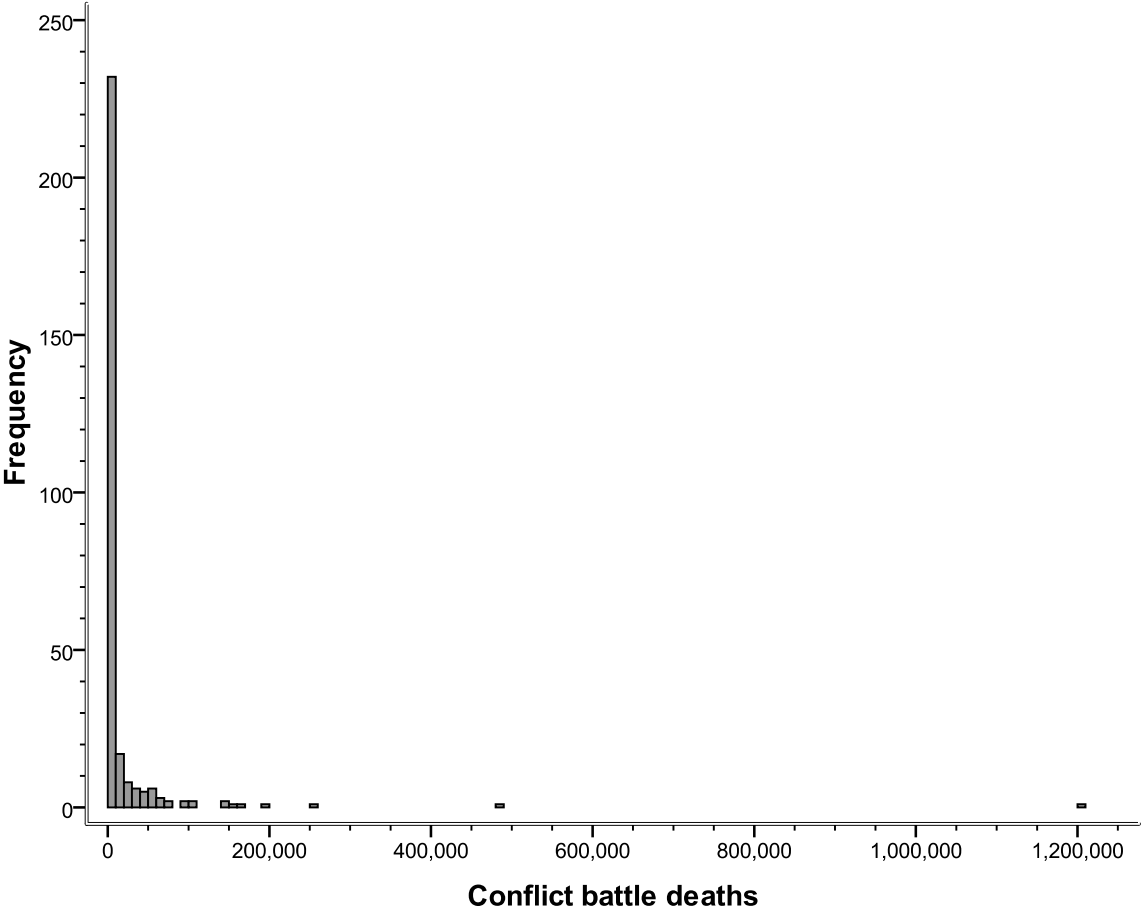


Figure 3.2: Histogram of total conflict battle deaths in civil conflicts, 1946-2003

3.4.2 Transnational Variables

Transnational Ethnic Ties

How does one operationalise personal feelings of ethnic affinity and kinship? This problem faces anyone who wants to conduct quantitative analysis where ethnicity features as a variable. While quantification of ethnicity can be theoretically problematic, I argued in Chapter 2 that reification of ethnic groups is sometimes methodologically feasible.

⁴ Heger and Salehyan (2007:394) operationalise their dependent variable in terms of the natural log of the death rate. The death rate is measured by dividing conflict battle deaths by the country’s population at the beginning of the conflict. I have chosen to instead follow Lacina (2006) who operationalise conflict severity in terms of logged total conflict battle deaths and add the log of population as a control variable. This approach allows for testing the hypotheses concerning the effect of population size.

Table 3.1: Number of transnational ethnic linkages from conflict country

Linkages	Frequency	Percent	Valid percent
0	26	8.4	8.6
1	83	26.9	27.5
2	103	33.3	34.1
3	36	11.7	11.9
4	17	5.5	5.6
5	2	.6	.7
6	5	1.6	1.7
7	15	4.9	5.0
10	5	1.6	1.7
14	4	1.3	1.3
21	6	1.9	2.0
Total	302	97.7	100.0
Missing	7	2.3	
Total	309	100.0	

Transnational ethnic ties are here operationalised in terms of whether the same ethnic groups are present in different countries based on the groups' traditional settlement patterns. Specifically, the study utilises data on Transnational Ethnic Kin (TEK) developed by Idean Salehyan. This dataset is of very recent nature and has not in its present form been employed in published research. It is, however, based on the classical Soviet ethnographic work *Atlas Narodov Mira*, a common source of quantitative data on ethnic groups. In this atlas the spatial distribution of ethnic groups is documented in a series of detailed maps covering all the continents.

More of the geographical information in these data has recently been made available through a recent digitalising project (Cederman, Rød and Weidmann, 2007). Although the data reflect the situation in the 1960s, the inertia of ethnic settlement patterns helps defend using this source today, at least as long as updated data of a similar quality are unavailable. The original work is complete and carefully researched, relies on a uniform group list that is valid across borders and provides detailed information on the geographical distribution of ethnic groups (Cederman, Rød and Weidmann, 2007).

On the basis of Salehyan's TEK data I code a binary indicator, or dummy variable, indicating whether or not at least one ethnic group in a country has ties to ethnic kin present in another state. As seen from Table 3.1, a problem with a simple dummy variable as an operationalisation here is that only 8.4 per cent of the conflicts featured no ethnic linkages. In

order to make use of more of the information available I therefore also generate an alternative indicator reporting the number of such linkages. There is significant variation on the numerical indicator. While the majority of the countries experiencing armed conflict feature zero, one or two transnational ethnic linkages, China, Russia (from 1991) and the Soviet Union (until 1990) feature 10, 14 and 21 respectively.

Foreign Support

Detailed data on foreign support for conflict parties have also only very recently become available. The Non-State Actor (NSA) dataset provides data on different kinds of support for either the government or for the rebel group(s) active in a conflict (Cunningham, Gleditsch and Salehyan, 2009b; see also Salehyan, Gleditsch and Cunningham, 2008). The dataset is developed as an expansion of the Uppsala/PRIO Armed Conflict Data (ACD), something which aides its application in this study.

On the other hand, the NSA data are structured according to conflict dyads, resulting in several observations for individual conflicts where different non-state actors have been active or when important characteristics of the dyadic relationship have changed over time. For example, in the 1980s several anti-apartheid groups organised violent opposition to the South African government. The NSA thus records three active conflict dyads consisting of the South African apartheid state on the one hand and the African National Congress (ANC), the Pan-African Congress (PAC) and the Azanian People's Organization (AZAPO) respectively on the other.

Employing these data for my purposes has therefore meant that several NSA observations sometimes have had to be summarised to one. In cases where a large number of NSA observations have been applicable to one conflict, one or a few observations have been selected based on extent of overlapping time periods and representativeness. A reading of the extensive notes on the original coding of conflict dyads has made such selection possible (Cunningham, Gleditsch and Salehyan, 2009b). Unfortunately, for quite a few conflicts, data on transnational support are not available, resulting in some missing values. In the case of South Africa, all three organisations received outside support and the data on the three dyads could easily be summarised. The individual coding decisions are listed in Appendix 2.

In total, I code indicators on four types of foreign support for rebel groups. The NSA dataset also contains information about support for the state party to the conflict. However,

including an indicator of foreign intervention or other types of support from one government to another would arguably lead to an endogeneity problem since the direction of causation for the relationship between this kind of support and conflict severity is not clear, as discussed in Chapter 2. I return to this issue below.

As support for rebels is qualitative information, the indicators are dummy variables reporting the presence or absence of each type of support. The first indicator reports whether a rebel group received support from a foreign government. The second indicates if the group had presence in one or more other states. As was mentioned as part of the theoretical discussion, this need not always take place with the blessing of the host state but the variable is included here for simplicity and based on the assumption that in most cases such presence must at least be tolerated by the government in question. The third and fourth indicators respectively report on non-military and military support provided by transnational non-state actors. These actors may be ethnic kin groups, diaspora communities or sympathising organisations.

Table 3.2: Descriptive statistics of foreign support for conflict parties

3.2a: Foreign government support for rebels

Support present	Frequency	Percent	Valid Percent
0 (No)	127	41.1	45.2
1 (Yes)	154	49.8	54.8
Total	281	90.9	100.0
Missing	28	9.1	
Total	309	100.0	

3.2b: Rebel presence in other state

Support present	Frequency	Percent	Valid percent
0 (No)	133	43.0	48.0
1 (Yes)	144	46.6	52.0
Total	277	89.6	100.0
Missing	32	10.4	
Total	309	100.0	

3.2c: Non-state non-military support for rebels

Support present	Frequency	Percent	Valid Percent
0 (No)	191	61.8	67.5
1 (Yes)	92	29.8	32.5
Total	283	91.6	100.0
Missing	26	8.4	
Total	309	100.0	

3.2d: Non-state military support for rebels

Support present	Frequency	Percent	Valid Percent
0 (No)	232	75.1	82.3
1 (Yes)	50	16.2	17.7
Total	282	91.3	100.0
Missing	27	8.7	
Total	309	100.0	

Table 3.2 reports descriptive statistics on the four indicators of transnational support. Support for insurgents by a foreign government and presence of rebels in another state features in just more than half of the conflicts for which data are available. Non-state support for rebels, militarily or non-militarily is less frequent but not uncommon. The 26-32 missing values reported are for many of the same observations. In terms of battle deaths these observations are distributed throughout the dataset and should thus not produce biased results.

I have criticised Lacina's (2006) use of an indicator of whether the conflict started during the Cold War or not as a proxy for foreign support. Such a variable will necessarily capture any difference in conflict severity before or after 1989 not controlled for by other variables, whether or not it is due to differences in foreign support. Given the endogeneity problems concerned with including indicators of actual support for the government, however, there is a need for a proxy of such assistance. It turns out that foreign government support for rebels and for the government side is positively correlated with a Pearson correlation coefficient of .243 and statistically significant at the 0.1 % level. For a Cold War dummy the bivariate correlation coefficient has the wrong sign (negative), is much weaker and not significant at the 5 % level. Support for rebels thus seems to be a better proxy for support for the government than is a Cold War dummy.

Neighbouring Conflict

The third and last of the transnational factors presented in Chapter 2 was that of ongoing internal armed conflict in a neighbouring state. The main operationalisation of neighbouring conflict is a dummy variable taking the value one if at least one neighbouring state experienced internal armed conflict for at least parts of the conflict period of the unit of observation. For example, during the 1991-2000 civil war in Sierra Leone both of its two neighbours saw conflict as well. Liberia suffered active civil conflict both during 1989-1995 and 2000-2003 and the government of Guinea fought the Rally of Democratic Forces of Guinea (RFDG) in 2000-2001. These conflicts were clearly interlinked (Cunningham, Gleditsch and Salehyan, 2009b).

Since most of the factors expected to contribute to increased civil conflict severity mainly apply to land borders, only directly contiguous states are coded as neighbours (Buhaug and Gleditsch, 2008:223). Data on neighbouring conflict is available from Buhaug and

Gleditsch (2008) who also base their data on the Uppsala/PRIO ACD. However, this replication dataset only covers the period 1950-2001. Based on conflicts recorded in the ACD outside this period I expand the data coverage backwards to 1946 and forwards to 2003 by checking for conflicts in bordering states for each observation (see Table 3.3ab).

I also include more specific indicators of inter-conflict linkages. One binary indicator reports whether or not there was a neighbouring conflict zone at the shared border during the time of the conflict. As was mentioned in Chapter 2, refugee flows have been found to be correlated with conflict onset and thus might affect conflict severity as well (Salehyan and Gleditsch, 2006). I operationalise this in terms of the logged average number of refugees from neighbouring conflict(s) present in the state during the time of domestic conflict as well as establishing a dummy variable simply indicating whether or not refugees from a neighbouring conflict were present. The data on which these additional more specific variables are based have also been collected from Buhaug and Gleditsch (2008). Since these data cannot as easily be extended, however, this set of variables includes some missing values. Table 3.3 reports descriptive statistics.

Table 3.3: Descriptive statistics of neighbouring conflict

3.3a: Neighbouring conflict (Buhaug and Gleditsch (2008) only)

Value	Frequency	Percent	Valid percent
0 (No)	82	26.5	29.3
1 (Yes)	198	64.1	70.7
Total	280	90.6	100.0
Missing	29	9.4	
Total	309	100.0	

3.3b: Neighbouring conflict (extended)

Value	Frequency	Percent	Valid percent
0 (No)	94	30.4	30.4
1 (Yes)	215	69.6	69.6
Total	309	100.0	100.0
Missing	0	0	
Total	309	100.0	

3.3c: Neighbouring conflict zone at border

Value	Frequency	Percent	Valid percent
0 (No)	99	32.0	35.4
1 (Yes)	181	58.6	64.6
Total	280	90.6	100.0
Missing	29	9.4	
Total	309	100.0	

3.3d: Refugees from conflict neighbour

Value	Frequency	Percent	Valid Percent
0 (No)	182	58.9	65.2
1 (Yes)	97	31.4	34.8
Total	279	90.3	100.0
Missing	30	9.7	
Total	309	100.0	

As we see, the phenomenon that a country experiencing internal conflict has at least one neighbouring state also suffering from civil war for some time of the conflict period is quite common. The valid percent of neighbouring conflict is around 70 percent both before and after extending the data coverage (3.3ab). Having a neighbouring conflict zone at the border is actually almost as common, at 64.6 percent (3.3c), in line with previous research finding that conflicts often take place in border regions (Buhaug and Gates, 2002). 34.8 percent of conflicts with available data had refugees from a neighbouring conflict present (3.3d). For these countries the logged average numbers of refugees are quite evenly distributed along the range of .16-15.0.

3.4.3 Replication and Control Variables

Duration

As discussed in Chapter 2 there is reason to believe conflict duration to be one of the most important independent variables as an additional conflict year per definition has to add 25 or more battle deaths to the total. Since data on battle deaths are recorded per year and since the precision and accuracy of data on start and end dates of conflicts vary greatly, duration is operationalised in terms of the logged number of active conflict years. Since 2003 is the last year in the dataset, this is coded as the end year of conflicts whether or not they were recorded in the ACD as ongoing in following years. These coding practices are in line with previous research and thus aid comparison of results (Lacina, 2006; Heger and Salehyan, 2007).

An interpretation of the effect of duration would be more meaningful in terms of absolute years rather than percentages but, as Table 3.4 reveals, there is a high degree of skewness in these data, necessitating logging. While 44.3 percent of the conflicts lasted only one year, for conflicts lasting five years and longer each yearly category contains less than three percent of the observations. Some conflicts have been extremely long-lasting. The conflict between the government of Israel and various Palestinian organisations was recorded as active every year from 1949 to 1996 (48 years). Myanmar (Burma) between 1948 and 1992 saw three distinct but overlapping conflicts all lasting 41 years or longer.

The expected positive relationship between duration and severity could be weakened if there is a tendency for shorter conflicts to be more intense, i.e. to cause more battle

deaths per year. The long-running conflicts mentioned above are certainly not the ones with the largest total battle deaths. The regression results in Chapter 4 will answer this question. If the coefficient on logged duration is smaller than one there is indeed a tendency for shorter conflicts to be more intense. If it is larger than one, it means that not only are longer conflicts more severe, they also tend to cause more battle deaths per year.⁵

Table 3.4: Descriptive statistics of conflict duration

Duration	Frequency	Percent	Cumulative percent
1	137	44.3	44.3
2	43	13.9	58.3
3	27	8.7	67.0
4	17	5.5	72.5
5	13	4.2	76.7
6;48	72	23.3	100.0
Missing	0	0	
Total	309	100	

Income Level and Population

Two other important replication variables are country income level, operationalised in terms of gross domestic product (GDP) per capita, and the population of the country in question (Lacina, 2006; Heger and Salehyan, 2007). I get data on GDP per capita from Fearon and Laitin (2003a), one of the most extensive sources of such data. Most of these data were collected from the Penn World Tables 5.6, providing real per capita income, measured in 1985 U.S. dollars for the period 1950-1992. Fearon and Laitin (2003b) extend this series to 1999 based on the estimates of GDP per capita growth rates provided in the 2001 World Development Indicators (WDI) by the World Bank. They estimate additional missing values based on data on energy consumption from the Correlates of War Project (COW) which correlate strongly with GDP per capita. For the purpose of this project I extend these data forwards based on GDP per capita growth rates from the 2006 WDI (World Bank, 2006). After this

⁵ In a regression of log of battle deaths on log of duration (*ldur*) and other variables, the coefficient on *ldur*, $\hat{\beta}_D$, would be equal to $\hat{\beta}_D^* - 1$ where $\hat{\beta}_D^*$ is the coefficient from a regression with log of intensity (log of battle deaths per year) on *ldur* and other variables. In the latter regression, of course, $\hat{\beta}_D^*$ would be positive if longer wars are more severe and negative in the opposite case. The other coefficients and t-statistics would be the same in the two regressions.

procedure, the variable contains missing data on 22 observations, 6.8 percent of the total, due to missing data in Fearon and Laitin (2003a) and/or in the WDI.

As is common practice, I lag the data by one year in order to alleviate the endogeneity problem of civil war affecting income (Fearon and Laitin, 2003b:3; Lacina 2006). For a few observations, the civil war onset coincides with independence. In those cases I use the contemporaneous estimate, following Fearon and Laitin's (Fearon and Laitin, 2003b:3) arguments that yearly changes in income estimates are small and the one year impact of civil conflict appears to be limited. The same practice applies to the population variable described below. In contrast to Fearon and Laitin (2003a) I log the GDP per capita estimate. This reduces the large skewness in the values and one might expect a one unit increase here to have a larger impact on countries with low income than on high-income countries.

Data on the population size of countries experiencing conflict are collected from the COW project's National Material Capabilities dataset, v. 3.02 (Singer, Bremer and Stuckey, 1972). Since this dataset only provides estimates up to 2001, however, additional values are derived from the Expanded Population Data v. 1.1, compiled by Gleditsch (2002).⁶ This results in no missing values. As for the GDP per capita variable, the data are reported from the year before conflict onset with the exception of nine cases where this was a year prior to independence. Table 3.5 and Figures 3.3 and 3.4 illustrates the effect logging has on skewness and kurtosis of the data.

⁶ I correct an apparent data entry error for Haiti in 2003.

Table 3.5: Descriptive statistics of GDP per capita and population

3.5a: GDP per capita (1985 US dollars)

Statistic	Value
Valid N	291
Missing	18
Mean	1.94
Median	1.20
Mode	.20
Variance	4.23
Skewness	2.51
Kurtosis	8.53

3.5b: GDP per capita (logged)

Statistic	Value
Valid N	291
Missing	18
Mean	.22
Median	.19
Mode	-1.60
Variance	.90
Skewness	.07
Kurtosis	-.26

3.5c: Population (thousands)

Statistic	Value
Valid N	309
Missing	0
Mean	90310.89
Median	15000.00
Mode	18119
Variance	4.293*10 ¹⁰
Skewness	3.07
Kurtosis	8.49

3.5d: Population (logged)

Statistic	Value
Valid N	309
Missing	0
Mean	9.81
Median	9.62
Mode	9.80
Variance	3.01
Skewness	.42
Kurtosis	.01

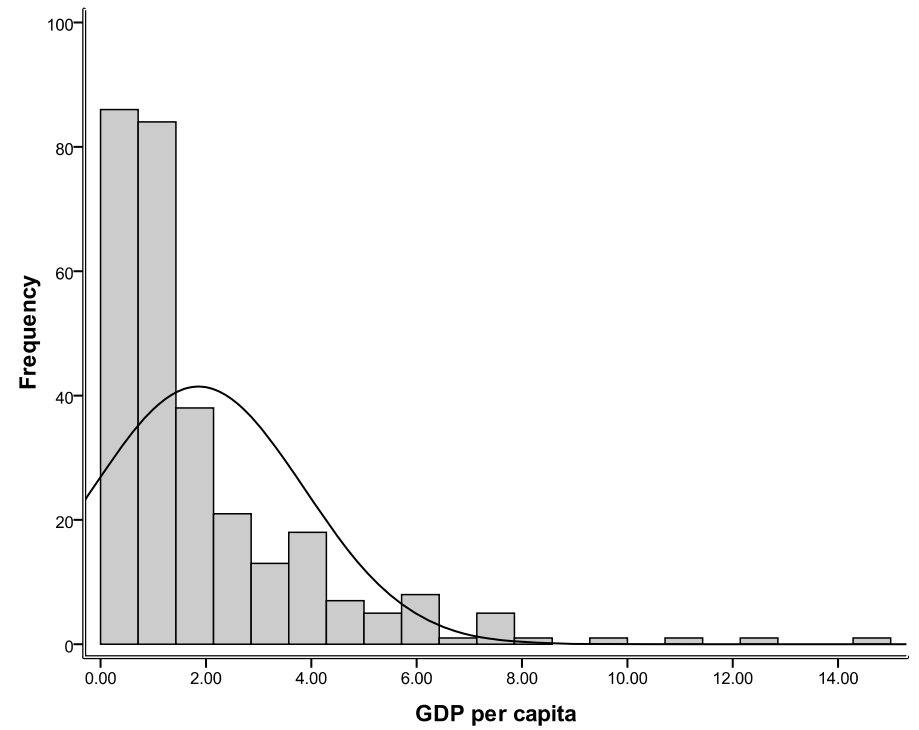
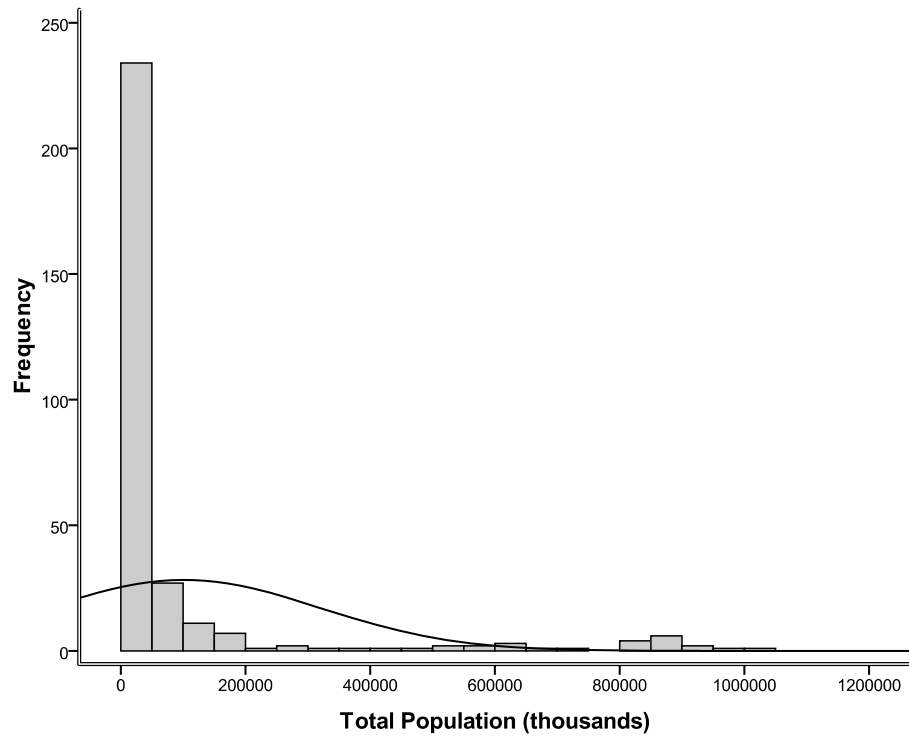


Figure 3.3: Histograms of total population in thousands and GDP per capita in 1985 U.S. dollars (both lagged by one year), with normal curve

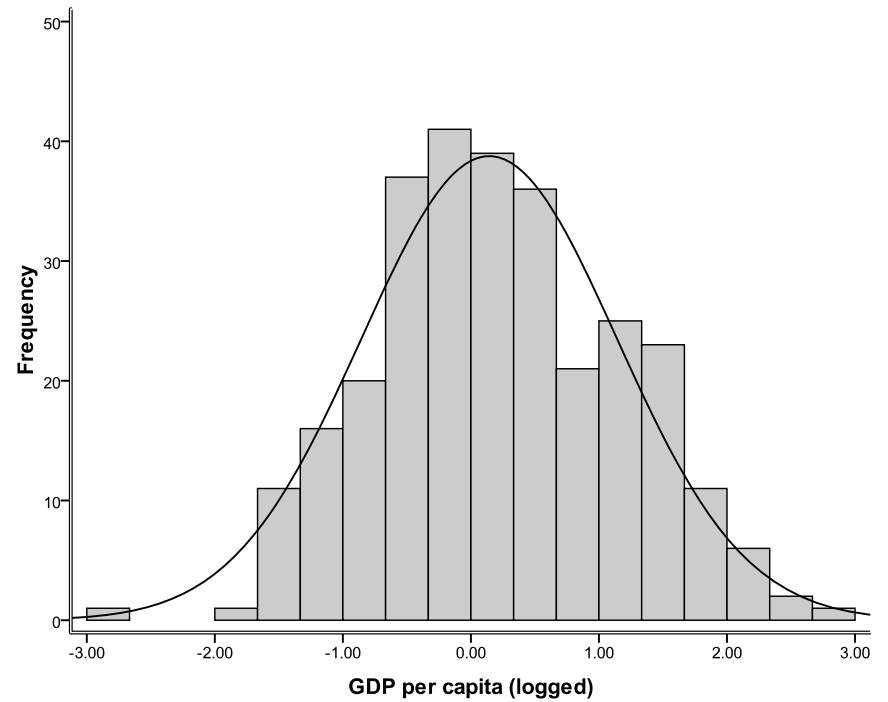
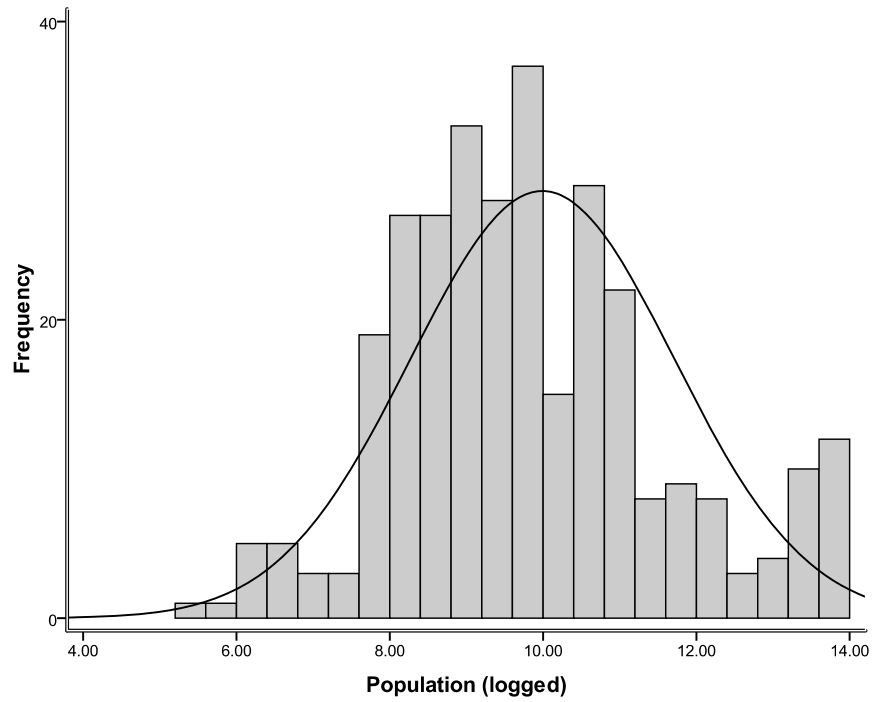


Figure 3.4: Histograms of population (thousands, logged, lagged) and GDP per capita (1985 U.S. dollars, logged, lagged), with normal curve

Other Country Characteristics

GDP per capita is often not only treated as a measure of economic productivity or development but also as an indicator of state capacity or strength (e.g. Fearon and Laitin, 2003a). Lacina (2006:284) suggests another measure of state capacity which is more directly related to counterinsurgency capabilities, namely military quality. Following Bennett and Stam (1996) this is defined as military expenditure divided by number of military personnel. This variable is also log transformed and lagged by one year so that it “may reflect the regime’s accurate forebodings of conflict but not an upsurge in spending or recruitment after the outbreak of conflict” (Lacina, 2006:285).

As Lacina (2006), I compute this replication variable based on data collected from the COW National Material Capabilities dataset, v. 3.02 (Singer, Bremer and Stuckey, 1972). Figure 3.5 reveals that there are two to three deviating observations. Particularly Paraguay (onset in 1947, value of -7.13) and Cote D’Ivoire (2002, -6.62), but to some extent also Laos (1959, 0.92), is reported to have had a considerable number of men under arms combined with exceptionally low military spending. In terms of battle deaths these observations do not stand out in any way but are spread out in the sample and should thus not significantly affect the regression results.

A factor that has previously been found to affect both conflict risk and conflict severity is the regime type, often measured as presence or absence of democracy (e.g. Fearon and Laitin, 2003; Lacina, 2006; Heger and Salehyan, 2007). I control for regime characteristics by using the democracy-autocracy index from the Polity IV project (Marshall and Jaggers, 2002). This is a composite index of democratic and authoritarian characteristics of regimes and ranges from -10 (most autocratic) to 10 (most democratic). Following the standard practice in the literature I create a dummy variable indicating democracy for countries with a Polity score of 6 and higher. Table 3.6 reveals that most conflicts took place in non-democracies.

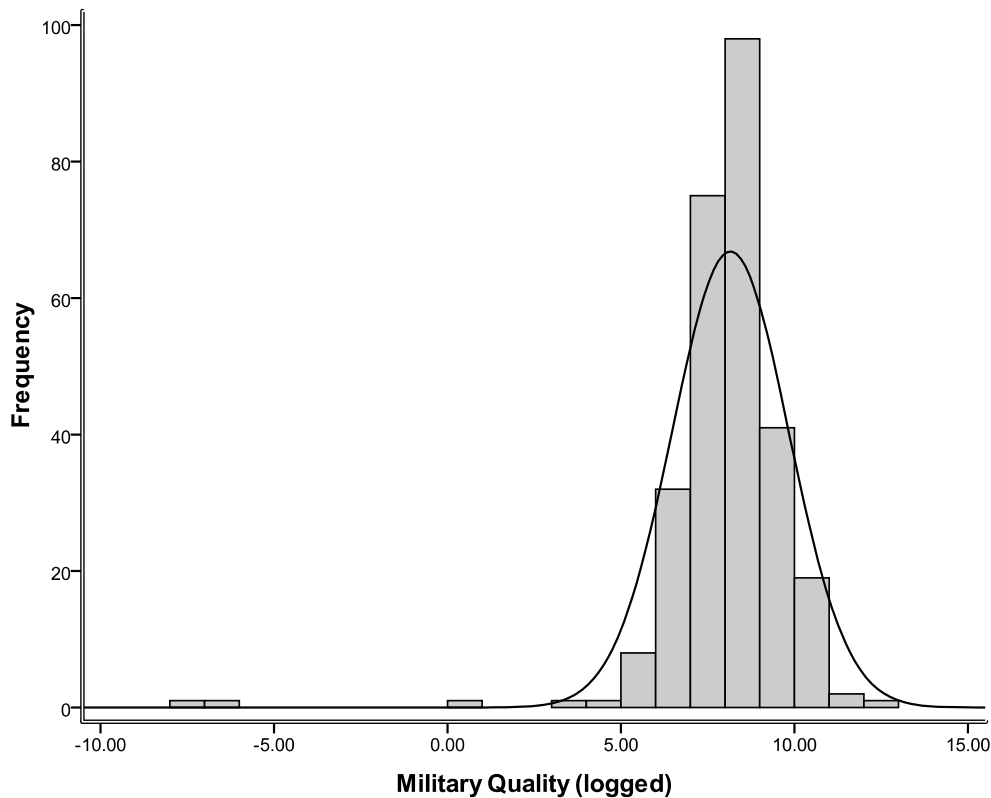


Figure 3.5: Histogram of military quality (logged and lagged), with normal curve

Table 3.6: Descriptive statistics of regime type

Regime	Frequency	Percent	Valid percent
Democracy	69	22.3	22.5
Non-democracy	237	76.7	76.5
Total	306	99.0	100.0
Missing	3	1.0	
Total	309	100.0	

A third domestic context variable, 'rough terrain' operationalised as percentage of mountainous territory, was introduced by Fearon and Laitin (2003a) for the purpose of investigating conflict onset and picked up by Lacina (2006) in her study of conflict severity. The underlying reasoning is that if much of a country's territory is relatively inaccessible it gives rebels an advantage over government forces. I collect data on this variable directly from Fearon and Laitin (2003a). They got most of their data from a World Bank survey but expanded it based on a measure of elevation difference (Fearon and Laitin, 2003b).

As seen from figure 3.6 there is significant variation on this variable, with some spikes breaking the normal curve where the same countries have experienced many civil conflicts. For example, India has a value of 2.63 and features in 23 observations in the dataset and the 3.6-3.8 interval encompasses both Myanmar (24 conflicts), Iran (14 conflicts) and others. Several countries which are ‘not mountainous’ have seen conflict. As is the case with military quality and some of the other variables presented here, percentage of mountainous terrain was found by Lacina (2006) not to be significant. Including these variables here allows for testing the robustness of her findings in the context of a larger number of observations.

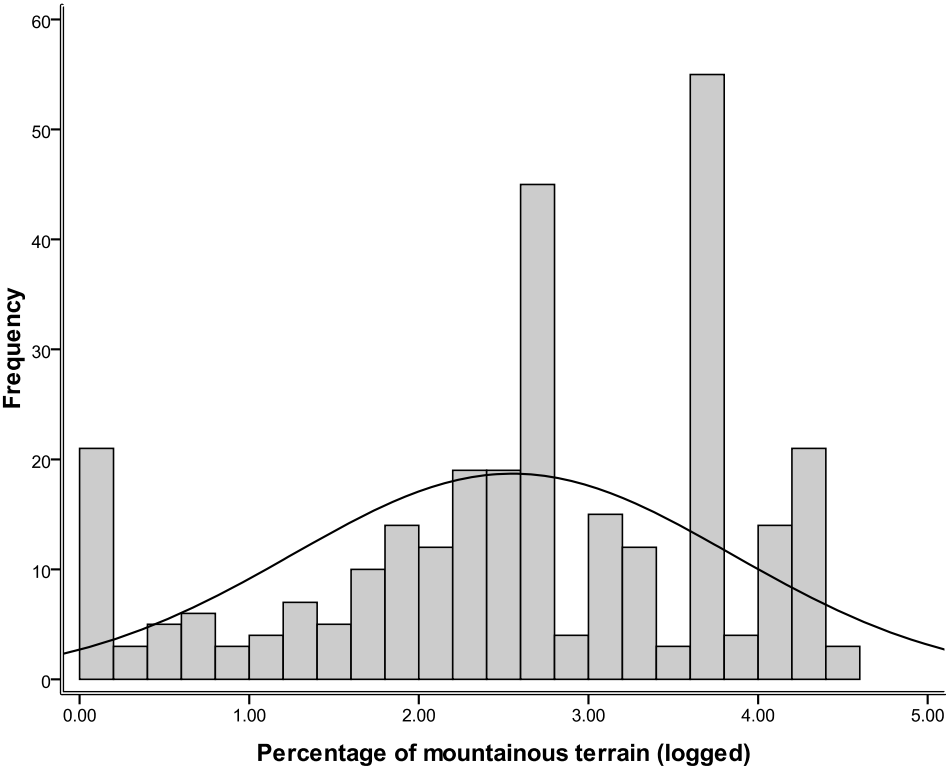


Figure 3.6: Histogram of percentage of mountainous terrain (logged), with normal curve

Ethnicity and Religion

Lacina (2006: 285) also includes indicators of ethnic and religious polarisation. These are dummy variables taking the value one if an ethnic or religious minority comprise at least eight percent of the population in the country experiencing conflict. This coding rule follows Fearon and Laitin (2003a) and the variable is computed from their data on sizes of largest

minority populations. Table 3.7 shows that the characteristics of ethnic and religious polarisation on their own are very common among countries having suffered from civil conflict.

One might expect that a combination of a large ethnic and religious minority group would be particularly powerful. However, an interaction term reporting whether both ethnic and religious polarisation is present in a country turns out to cause a multicollinearity problem due to a high correlation with the religious polarisation indicator. Such an interaction term is therefore not included in the analysis in Chapter 4.

Table 3.7: Descriptive statistics of ethnic and religious polarisation

3.7a: Ethnic polarisation				3.7b: Religious polarisation			
Value	Frequency	Percent	Valid percent	Value	Frequency	Percent	Valid percent
0 (No)	45	14.6	14.8	0 (No)	78	25.2	25.7
1 (Yes)	259	83.8	85.2	1 (Yes)	226	73.1	74.3
Total	304	98.4	100.0	Total	304	98.4	100.0
Missing	5	1.6		Missing	5	1.6	
Total	309	100.0		Total	309	100.0	

Rebel Strength and Objective

The Non-State Actor (NSA) dataset used as a source of data on transnational support also provides data on other actor specific characteristics (Cunningham, Gleditsch and Salehyan, 2009ab). The dynamics and ultimate severity of armed conflicts could be affected by factors such as the relative strength of the belligerents, whether or not the rebel group has a central command, if its aims are to overthrow the government or greater territorial autonomy and whether it actually controls territory.

The NSA dataset reports whether a rebel group militarily is, respectively, much weaker, weaker, at parity or stronger than the government forces. I use this information to compute a binary indicator of relative rebel strength taking the value zero if the rebels are weaker than the government and one if they are at parity or stronger, based on the notion that civil conflicts are normally highly asymmetrical in favour of the government. Whether the rebels are under the control of a central command, have aims concerning some sub-state territory and are able control territory are also coded in terms of dummy variables. Data on whether the conflict is over territory or government are available directly from the Uppsala/PRIO Armed Conflict Dataset (ACD) (Gleditsch et al., 2002).

As we see from Table 3.8a, in only 17.9 percent of the conflicts where data are available at least one of the active rebel groups was equally as strong as or stronger than the government side. Still, the vast majority of rebel groups have a central command structure (3.8b) and 36.3 percent have managed to control territory (3.8d). Conflicts over territory and government are almost equally common with the latter type being a bit less frequent than the former.

Table 3.8: Descriptive statistics of actor specific characteristics

3.8a: Relative rebel strength

Value	Frequency	Percent	Valid percent
0 (No)	243	78.6	82.1
1 (Yes)	53	17.2	17.9
Total	296	95.8	100.0
Missing	13	4.2	
Total	309	100.0	

3.8b: Rebel central command

Value	Frequency	Percent	Valid percent
0 (No)	25	8.1	8.8
1 (Yes)	258	83.5	91.2
Total	283	91.6	100.0
Missing	26	8.4	
Total	309	100.0	

3.8c: Rebel aims concern territory

Value	Frequency	Percent	Valid percent
0 (No)	174	56.3	56.3
1 (Yes)	135	43.7	43.7
Total	309	100.0	100.0
Missing	0	0	
Total	309	100.0	

3.8d: Rebels control territory

Value	Frequency	Percent	Valid percent
0 (No)	186	60.2	63.7
1 (Yes)	106	34.3	36.3
Total	292	94.5	100.0
Missing	17	5.5	
Total	309	100.0	

Geographic Variation

There might be variations between world regions that are not captured by the specific factors presented above. In order to test for this I code a set of dummy variables indicating if the conflict took place in one of five regions, namely Africa, the Americas, Asia, Europe and the Middle East. Egypt, Iran and Turkey are here defined as belonging to the Middle East. These coding rules equal those of the ACD (Gleditsch et al. 2002). Table 3.9 reports descriptive statistics showing that Africa and Asia each represent just below a third of recorded conflicts while the Americas, Europe and the Middle East saw fewer conflicts.

Table 3.9: Conflicts grouped by world region

Region	Frequency	Percent
Africa	101	32.7
Americas	35	11.3
Asia	98	31.7
Europe	34	11.0
Middle East	41	13.3
Missing	0	0
Total	309	100.0

The Time Dimension

It was mentioned above that a simple binary indicator of whether the conflict started during the Cold War or not, operationalised as before 1989 and in or after that year, could simply be capturing variation in severity over time. Such changes with time may be due to a number of different factors, for example technological developments. If this is so, other time period indicators might be better suited for capturing such change.

Figure 3.1 revealed that certain decades, particularly the 1940s and 1950s, were different from the rest of the sample in terms of yearly battle deaths. To allow for investigation of such decade related differences I compute a set of dummy variables for each decade present in the dataset. Further, Figure 3.7 plots the logged estimate of conflict battle deaths against year of conflict onset where the change in conflict severity over time is illustrated with a locally weighted scatter plot smoothing (LOESS) fit line with a triweight kernel function using 50 % of the data points (Cleveland, 1979; Cleveland and Devlin, 1988). The line indicates that there is little change over time in the first half of the data but that the logged number of conflict battle deaths starts to decline in the late 1970s. The following chapter will also refer back to Figure 3.7.

The strength of separating between conflicts starting before and after 1989 (dotted reference line in Figure 3.7) is clear in that the conflicts, on average, were more severe before than after this date. It is interesting to note, however, that the decline in battle deaths per conflict started well before the end of the Cold War, actually as early as after 1978 (reference line to the left in Figure 3.7). This further weakens the case for using it as a proxy for foreign support provided by cold warriors. As an alternative, it appears that separating between before and after 1992 (line to the right in Figure 3.7) might be marginally more pow-

erful. Also, in order to try to capture more of the gradual decline I compute a set of three dummy variables splitting the dataset into the periods 1946-1978, 1979-1991 and 1992-2003. As seen from Table 3.10, while a Cold War variable splits the dataset into two groups of about 50 percent each, the alternative time differentiation produces groups respectively constituting between 25 and 40 percent of the cases. There are no missing values on these variables.

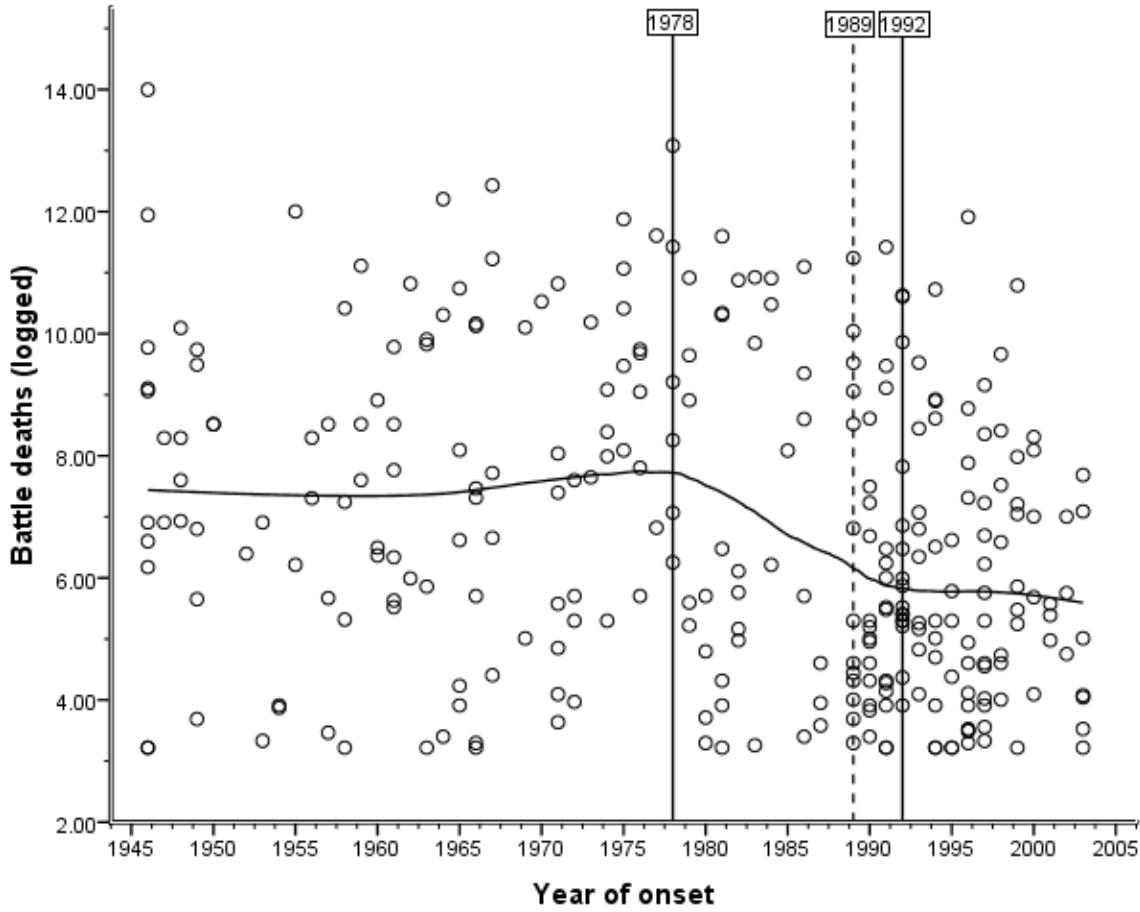


Figure 3.7: Scatter plot of logged conflict battle deaths against year of conflict onset, 1946-2003

Table 3.10: Descriptive statistics of time variables

Variable	Frequency	Percent
Onset before 1989	162	52.4
Onset 1946-1978	123	39.8
Onset 1979-1991	83	26.9
Onset 1992-2003	103	33.3

3.5 Summary

This chapter has provided a discussion of the type of research conducted in this study in relation to philosophy of science positions. The specific methodology used in this investigation, ordinary least squares regression analysis, has been presented and problems and limitations considered. The rest of the chapter was devoted to operationalising the dependent variable, the explanatory and the control variables.

For the operationalisation of transnational support and transnational ethnic linkages in particular, data are sourced from newly constructed datasets, and a note on the use of such data is in place. The NSA data was made available to the research community in April 2009 and Idean Salehyan shared the TEK dataset with me even though it to some extent is still under development. An advantage with employing recently available data is of course that it enables testing of hypotheses which previously could not be tested or had to be tested using less applicable operationalisations. Potential drawbacks concern the reliability such data sources.

Even though each of these two datasets are carefully and competently researched and the TEK data are unlikely to see developments that will radically change my results, it can be observed that common datasets are improved as more researchers employ the data and point out shortcomings. The ACD, for example, continues to see changes relating to conflicts that have been included in numerous versions of the dataset (Harbom, Melander and Wallensteen, 2008; UCDP/PRIO, 2008). Still, I judge the benefits of making use of new data to be greater than the disadvantage of potential inaccuracies. It must be the role of future research to check the robustness of previous findings. Table 3.11 on the following page summarises the operationalisations of the factors included in the equation in part 3.3.

Table 3.11: Summary of operational variables

Theoretical variable	Operationalisation
Conflict severity (dependent variable)	<ul style="list-style-type: none"> • Natural log of best estimate of total conflict battle deaths • (Also low and high estimates to be used for robustness checks)
Transnational ethnic linkages (β_1)	<ul style="list-style-type: none"> • Alternatives: <ul style="list-style-type: none"> ○ Binary indicator for transnational ethnic linkages ○ Numerical indicator of transnational ethnic linkages
Transnational support (β_2)	<ul style="list-style-type: none"> • Binary indicators of: <ul style="list-style-type: none"> ○ Foreign government support for rebels ○ Rebel presence in other state(s) ○ Non-state non-military support for rebels ○ Non-state military support for rebels
Neighbouring conflict (β_3)	<ul style="list-style-type: none"> • Binary indicators of: <ul style="list-style-type: none"> ○ Conflict in neighbouring state ○ Neighbouring conflict zone at border ○ Refugees from neighbouring conflict • Logged number average number of refugees from neighbouring conflict (as alternative to the binary indicator)
Regime type (β_4)	<ul style="list-style-type: none"> • Binary indicator of democracy
Ethnic polarisation (β_5) and religious polarisation (β_6)	<ul style="list-style-type: none"> • Binary indicator of an ethnic minority constituting at least eight percent of the population • Binary indicator of an religious minority constituting at least eight percent of the population • Interaction term of the two above indicators
Population (β_7)	<ul style="list-style-type: none"> • Logged estimate of country population lagged by one year
Income (β_8)	<ul style="list-style-type: none"> • Logged estimate of gross domestic product per capita lagged by one year
Military quality (β_9)	<ul style="list-style-type: none"> • Logged estimate of military expenditure over number of military personnel
Rough terrain (β_{10})	<ul style="list-style-type: none"> • Logged percentage of mountainous territory
Rebel group objective (β_{11})	<ul style="list-style-type: none"> • Binary indicator of conflict type
Duration (β_{12})	<ul style="list-style-type: none"> • Logged number of consecutive active conflict years
Rebel group strength (β_{13})	<ul style="list-style-type: none"> • Binary indicators of: <ul style="list-style-type: none"> ○ Relative strength ○ Central command ○ Territorial control
World region (β_{14})	<ul style="list-style-type: none"> • Binary indicators of conflict taking place in: <ul style="list-style-type: none"> ○ Africa ○ The Americas ○ Asia ○ Europe ○ The Middle East
Change with time (β_{15})	<ul style="list-style-type: none"> • Alternative separations: <ul style="list-style-type: none"> ○ 1946-1988, 1989-2003 (Before or after the Cold War) ○ 1946-1978, 1979-1991, 1992-2003

4 Findings and Discussion

4.1 Introduction

After having established a theoretical framework for the study in Chapter 2 and provided suitable methodology and operational definitions in Chapter 3, the hypotheses on factors potentially affecting conflict severity can now be tested.

Part 4.2 presents results from regressions with the logged number of conflict battle deaths as the dependent variable. I find that most, but not all, findings from previous studies of conflict severity are robust to control for transnational factors. Of the transnational variables, transnational ethnic ties and some types of foreign support for rebels do have significant effects on severity. I further discover that severity is not a linear function of duration and that a Cold War variable is primarily an indicator of change over time, at least as long as transnational factors are controlled for. Throughout this part I draw conclusions about hypotheses and comment on how the results compare to previous research.

In Part 4.3 I comment on limitations pertaining to the operational definitions employed in the present study and outline possible extensions before Part 4.4 summarises and concludes the chapter.

4.2 Results

In this part I present results from a total of five sets of regression analysis. In Section 4.2.1 I rerun a model from Lacina (2006) in order to facilitate direct comparison with previous findings and uncovering to what extent a lower threshold for inclusion of a conflict, and thus a larger set of observations, affect results. Then, in the second section, I present results from models including all transnational and control variables, except alternative time indicators which I return to later. Since several variables turn out not to be significant, Section 4.2.3 presents results from reduced models providing specific effects of only significant coefficients. In a fourth section I test for change over time and find that this only affects the result on one variable, namely the Cold War indicator, which becomes non-significant. Finally, in Section 4.2.5, I test the robustness of the findings by using alternative measures of the de-

pendent variable. The overall conclusions about effects on severity are not overturned by using low and high estimates of battle deaths instead of the best estimate.

4.2.1 Explaining Severity in Terms of Domestic Context

Lacina’s (2006) path breaking study shed light on how domestic factors affect the severity of civil conflict. Her results informed Hypotheses 1-7 in Chapter 2. She found that conflict duration and onset before 1989 (during the Cold War) had a positive effect on severity while democracy and ethnic polarisation were associated with conflicts with fewer battle deaths. A number of factors turned out not to be significant.

Model 1, in Table 4.1, provides a replication. Replication is not the central aim of this study but it provides a useful illustration of the differences in results following from different datasets. The data on all variables are collected from the same sources,⁷ but my dataset is different in that one year, 2003, is added to the time-frame and in that I include all conflicts, not only those that caused a minimum of 900 battle deaths in total.

Table 4.1: OLS regressions for battle deaths. Duration and domestic context variables.

<i>Model 1</i>			
<i>Independent variable</i>	$\hat{\beta}$	<i>SE</i>	<i>p-value</i>
Ln Duration	1.69	.12	<.001
Ln Population	.01	.11	.910
Ln GDP per capita	.01	.17	.954
Ln Military quality	-.10	.04	.020
Democracy	-1.03	.30	.001
Ethnic polarisation	-1.11	.46	.018
Religious polarisation	.26	.40	.515
Ln Percentage mountainous territory	.12	.13	.372
Cold War	.81	.26	.003
Constant	6.15	.96	<.001
<i>N</i>	251		
<i>R</i> ²	.58		
\bar{R}^2	.57		

Heteroskedasticity-consistent standard errors are used, clustered by country. *p*-values are of two-tailed significance tests.

The only methodological difference between our two studies is that I employ heteroskedasticity-consistent standard errors, as described in Chapter 3. This is warranted.

⁷ Some of the data sources have in the meantime been updated, however, as described in Chapter 3.

Conducting a White test for heteroskedasticity reveals that the null hypothesis of homoskedasticity can be rejected at the 5 % level of significance as the reported p -value for the F-test is .026. Also, since different conflicts taking place within the same country cannot be regarded as independent of each other, the robust standard errors are clustered by country.

There are certainly strong similarities with Lacina's (2006:286) results. As in her study, the effects of duration and onset during the Cold War are both positive, relatively strong and highly significant with low p -values. Also similar, democracy and ethnic polarisation are strong, negative and significant, here at the 1 and 5 % level respectively. As expected, population size, income level, religious polarisation and rough terrain do not have significant effects on conflict severity. This replication thus lends support to several of the results in Lacina (2006). From another perspective similarity between results can be seen as lending confidence to the new dataset compiled from original data sources.

However, not all results in Table 4.1 match previous findings. While Lacina (2006:286) found military quality not to have a significant effect on conflict severity, the coefficient attains significance at the 5 % level here. The negative sign indicates that the higher the quality of the state military, the less severe the conflict. A theoretical explanation could be that a stronger military will be able to end a conflict before it escalates. One should keep in mind, however, that these are not the final results, and conclusions about hypotheses will consequently not be drawn here.

Another important difference is that the coefficient on the natural log of duration is now 1.69, i.e. higher than 1. Lacina (2006:286), on the other hand, estimates this effect to lie between .80 and .87. As explained in Chapter 3, if this coefficient is stronger than 1, it indicates that longer-running conflicts are also more intense. There is thus a notable difference regarding the conclusion about the relationship between duration and intensity. This discrepancy is likely stemming from the fact that I include a number of smaller conflicts among the units of observation. If this is indeed the reason for dissimilarity in results, it means that the positive effect of duration on severity is not linear but decreasing in strength as conflicts increase in duration. Plotting the log of battle deaths against the log of duration and comparing a linear and quadratic fitted line lends support to this suspicion (Figure 4.1). The R-squared values reveal that the curve-linear line explains somewhat more of the variation on the battle deaths variable than a straight line does.

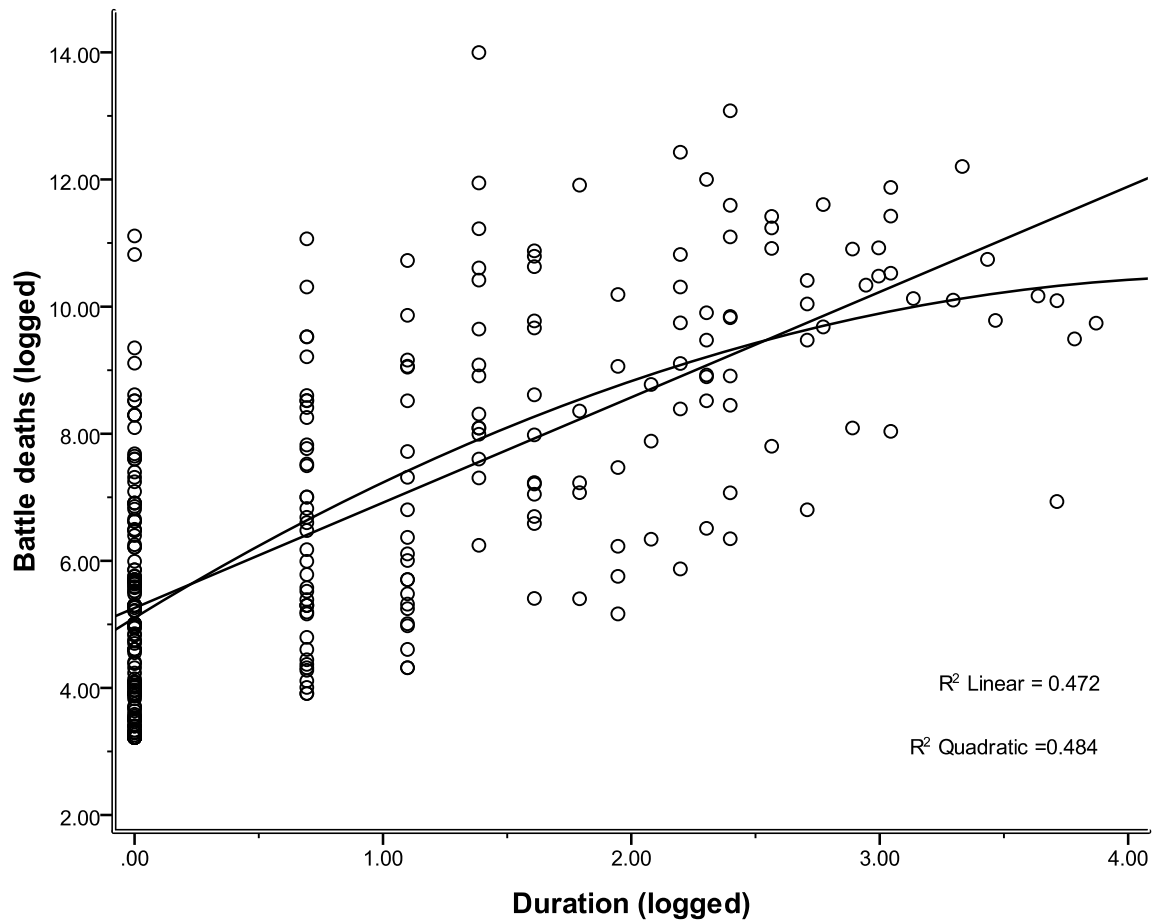


Figure 4.1: Logged number of battle deaths plotted against logged number of conflict years with linear and quadratic fit line.

Model 2 includes the same variables as Model 1 plus a squared version of the duration variable. As expected, the new variable has a negative sign and it is also highly significant with a p -value of .006. In this model the coefficient on the regular duration variable is considerably stronger than in Model 1 with a value of 2.54 compared to 1.69. This change is also in line with Figure 4.1 where the quadratic line initially has a steeper slope than the straight line. The other estimates see small changes in terms of strength and the same variables are significant and non-significant. The effects of population and GDP per capita change sign but remain very weak and with very high p -values.

Table 4.2: OLS regressions for battle deaths. Duration, duration squared and domestic context variables.

<i>Model 2</i>			
<i>Independent variable</i>	$\hat{\beta}$	<i>SE</i>	<i>p-value</i>
Ln Duration	2.54	.35	<.001
Ln Duration ²	-.31	.11	.006
Ln Population	-.02	.11	.862
Ln GDP per capita	-.003	.16	.985
Ln Military quality	-.09	.04	.030
Democracy	-.94	.32	.004
Ethnic polarisation	-1.14	.46	.014
Religious polarisation	.22	.36	.541
Ln Percentage mountainous territory	.13	.13	.293
Cold War	.93	.28	.001
Constant	6.16	1.00	<.001
<i>N</i>	251		
R^2	.60		
\bar{R}^2	.58		

Heteroskedasticity-consistent standard errors are used, clustered by country.
p-values are of two-tailed significance tests.

4.2.2 Adding Transnational Dimensions

The replication model proved to be very useful in revealing that severity is not a linear function of duration, as has been implicitly assumed in previous studies (Lacina, 2006; Heger and Salehyan, 2007; Weinstein, 2007). I have, however, argued that a number of other variables should be controlled for when seeking to explain variation in conflict severity. Table 4.3 reports results from two models including all the transnational factors, the actor-specific variables and regional controls as operationalised in Chapter 3 in addition to the variables from Model 2.

I proposed two alternative operationalisations of transnational ethnic linkages and presence of refugees from a neighbouring conflict. Model 3 includes the two dummy indicators while the numerical variables are used in Model 4. Variables with significant effects will be retained in following reduced models. Consistently non-significant variables will not be retained and conclusions regarding relevant hypotheses are drawn here.

Table 4.3: OLS regressions for battle deaths. All transnational variables.

<i>Independent variable</i>	<i>Model 3</i>			<i>Model 4</i>		
	$\hat{\beta}$	<i>SE</i>	<i>p-value</i>	$\hat{\beta}$	<i>SE</i>	<i>p-value</i>
Ln Duration	2.56	.34	<.001	2.60	.33	<.001
Ln Duration ²	-.34	.10	.001	-.33	.10	.002
Ln Population	.04	.11	.744	.0006	.11	.996
Ln GDP per capita	-.39	.17	.024	-.40	.17	.016
Ln Military quality	-.09	.09	.344	-.08	.09	.421
Democracy	-.97	.25	<.001	-.80	.26	.003
Ethnic polarisation	-.55	.44	.223	-.44	.43	.316
Religious polarisation	-.09	.36	.790	-.22	.36	.539
Ln % mountainous territory	.10	.11	.363	.09	.11	.382
Cold War	.87	.26	.001	.90	.25	<.001
Transnational ethnic linkages	.10	.40	.808			
Number of transnational ethnic linkages				.11	.06	.059
State support for rebels	.28	.25	.271	.28	.25	.263
Rebel presence in other state(s)	-1.05	.25	<.001	-.98	.25	<.001
Non-state non-military support for rebels	.81	.32	.012	.77	.30	.014
Non-state military support for rebels	.98	.29	.001	.94	.29	.002
Conflict in neighbouring state	-.54	.34	.119	-.52	.34	.137
Neighbouring conflict zone at border	.45	.39	.247	.27	.39	.481
Refugees from neighbouring conflict (d)	.29	.31	.345			
Ln number of refugees from neighbouring conflict				.03	.03	.305
Territorial conflict	-.20	.30	.514	-.27	.29	.362
Relative rebel strength	.36	.35	.298	.38	.36	.303
Rebel central command	-.29	.39	.464	-.36	.36	.328
Rebel territorial control	.98	.25	<.001	.86	.25	.001
Africa	-1.00	.50	.048	-.48	.53	.371
Americas	-.11	.60	.835	.37	.54	.495
Asia	-.87	.51	.091	-.37	.53	.479
Middle East	-.77	.43	.076	-.44	.42	.286
Constant	6.17	1.38	<.001	5.94	1.28	<.001
<i>N</i>	195			195		
<i>R</i> ²	.71			.72		
\bar{R}^2	.67			.68		

Heteroskedasticity-consistent standard errors are used, clustered by country. *p*-values are of two-tailed significance tests.

A number of features in Table 4.3 warrant attention. The number of observations included is now considerably lower, 195 compared to 251 in Model 1 and 2, a product of the added variables having some missing values. The value of R-squared has increased and is now .71 and .72 compared to .60 in model 2. R-squared always increases in value when a variable is added to the model. In following models where non-significant variables are dropped, the value of N will increase and the R-squared will be lower. That a higher share of observations in the dataset is taken into account lends more credibility to the results and a slightly lower R-squared value is indeed a small price to pay. Also, adjusted R-squared or \bar{R}^2 , a goodness-of-fit measure that penalises additional explanatory variables, enables comparison across models. It is clear that the goodness-of-fit is greater for Models 3 and 4 than for Models 1 and 2, even after adjustment.

Regarding the variables from Model 2, some results are robust to the control for new variables while others see some noticeable changes. The two duration variables strengthen slightly and remain highly significant. The population variable changes sign but remains very weak and non-significant. GDP per capita, however, is now much stronger and significant at the 5 % level. Military quality, on the other hand, fails to attain significance. Democracy and Cold War, important predictors from Model 1 and 2, remain strong and significant at the 1 % level. Ethnic polarisation, the second strongest coefficient in Model 1 and 2, weakens considerably and now fails to attain significance at any conventional level. Religious polarisation and mountainous terrain remain non-significant.

Three domestic context variables have thus been non-significant in four different models and will not be retained in following models. That religious polarisation, population size, and rough terrain do not affect civil conflict severity is in line with hypothesis 3, 4 and 7. These hypotheses are considered confirmed. This conclusion is also in line with findings in Lacina (2006).

Moving on to the transnational variables, some of these also turn out to be significant. Regarding transnational ethnic ties, the dummy variable in Model 3 is not significant but the numerical indicator in Model 4 is significant at the 10 % level with a p -value of .059. The effect is positive but small. State support for rebels is not significant in any of the two models. This is the case even though this variable was expected to capture some of the ef-

fect of foreign state support for the government party to the conflict.⁸ The three other indicators of transnational support, namely rebel presence in another state and non-state military and non-military support for the rebels, are highly significant in both models. Contrary to what was expected, rebel presence in another state seems to have a relatively strong negative effect on civil conflict severity. Transnational support for an insurgency from a non-state actor, however, is associated with more severe conflicts.

None of the coefficients on the indicators of neighbouring conflict turn out to be significant. The dummy variable indicating ongoing conflict in a contiguous state has the strongest coefficient and the lowest p -value. It has a negative sign, contrary to what was expected. Hypothesis 15, which anticipated ongoing neighbouring civil war to be positively associated with conflict severity, is rejected.⁹ Significant transnational variables are retained in following models and discussed further below.

The variable indicating if the aims of the rebels primarily concern territory or government does not produce significant results. This is contrary to Heger and Salehyan (2007) who find that conflicts over territory are less severe than conflicts over government. They, however, do not control for rebel territorial control, for example. Hypothesis 12 which was based on an assumption that Heger and Salehyan's (2007) finding would be replicated here is therefore rejected.

Three indicators are used to measure rebel strength. The indicator of the insurgents' relative military standing in relation to government has a positive sign but is found not to be significant. Once more, this is contrary to results from Heger and Salehyan (2007) who report a positive and significant effect. This discrepancy may again owe to different model specifications. The variable on whether a rebel group has a central command structure is also not significant and this coefficient has a negative sign, opposite of what was expected. What is significant, however, is a relatively strong positive coefficient on the dummy variable indicating rebel control of territory.

Finally, Models 3 and 4 include a set of regional controls. Conflicts taking place in Europe form the base group. While none of these effects are statistically significant in Model

⁸ Foreign government support for rebels remain non-significant also when the Cold War variable is removed from the model. This variable was Lacina's (2006:285) operationalisation of foreign support.

⁹ As a robustness check, all transnational and actor specific variables found to be non-significant in Model 3 and 4 were individually added to Model 6 presented below. They all remained non-significant also in the context of this model with a higher number of observations included.

4, three out of four are significant at the 10 % level in Model 3. These results are clearly sensitive to the choice of indicators of ethnic linkages and refugee presence. Before concluding about Hypothesis 9 on regional variation in conflict severity, the performance of these variables in the context of fewer other controls will be explored. The following Model 5 includes all variables, or sets of variables, which in at least one previous model have been significant at the 10 % level.

Table 4.4: OLS regressions for battle deaths. Removing non-significant variables.

<i>Independent variable</i>	<i>Model 5</i>			<i>Model 6</i>		
	$\hat{\beta}$	<i>SE</i>	<i>p-value</i>	$\hat{\beta}$	<i>SE</i>	<i>p-value</i>
Ln Duration	2.77	.33	<.001	2.28	.32	<.001
Ln Duration ²	-.39	.11	<.001	-.23	.10	.022
Ln GDP per capita	-.44	.17	.012			
Ln Military quality	-.004	.06	.952			
Democracy	-.76	.27	.007	-.76	.26	.004
Ethnic polarisation	-.91	.38	.018	-.97	.41	.019
Cold War	.91	.25	<.001	.82	.24	.001
Number of transnational ethnic linkages	.05	.04	.254			
Rebel presence in other state(s)	-.91	.27	.001	-.68	.28	.015
Non-state non-military support for rebels	.40	.36	.267			
Non-state military support for rebels	1.06	.30	.001	.95	.29	.001
Rebel territorial control	1.08	.27	<.001	1.02	.26	<.001
Africa	-.54	.58	.352			
Americas	.34	.55	.537			
Asia	-.65	.55	.241			
Middle East	-.49	.50	.328			
Constant	5.64	.74	<.001	5.57	.41	<.001
<i>N</i>	220			249		
<i>R</i> ²	.67			.63		
\bar{R} ²	.65			.62		

Heteroskedasticity-consistent standard errors are used, clustered by country. *p*-values are of two-tailed significance tests.

4.2.3 Reduced Models

As seen from table 4.4, some results change as fewer variables are controlled for and more observations are included in the sample. Most notably, seven variables are not significant in

Model 5. Military quality, which has been of varying significance in previous models, is now reported as not significant. This is in line with Hypothesis 6 which expected government military quality not to affect civil conflict severity. These expectations followed from findings from Lacina (2006). The result on this variable is thus in line with previous research. The hypothesis is regarded as confirmed and the variable is not retained in following models.

The effect of transnational ethnic ties weakens compared to Model 4 and fails to attain statistical significance in Model 5. Thus, no indicator of such ethnic linkages has been consistently significant. Hypothesis 13, which anticipated a positive effect on civil conflict severity, does not find empirical support. This finding contrasts with previous studies which have found transnational ethnic ties to be associated with increased risk of conflict outbreak (Buhaug and Gleditsch, 2008; Cederman, Girardin and Gleditsch, 2007; Gleditsch, 2007). This non-finding may owe much to the control for actual instances of transnational support for conflict actors. Also, the effect of non-state non-military support for rebels weakens considerably compared to previous models and is now not significant. The other transnational variables that have been kept, however, remain significant.

In Model 5, none of the geographical indicators are statistically significant. I conclude from this that Hypothesis 9 is not confirmed. There is no significant variation in conflict severity between world regions.

Model 6 contains the same variables as Model 5 minus the seven that was not significant and GDP per capita. While the indicator of income level is reported in Model 5 to have a significant negative effect on civil conflict severity it fails to attain significance in the context of the other variables included in Model 6. This result is clearly sensitive to which other factors are controlled for and/or inclusion of additional variables in the sample. The conclusion is in line with previous findings which informed Hypothesis 5 (Lacina, 2006; Heger and Salehyan, 2007). On the other hand, that this variable appears with low p -values in models which include regional controls may justify further research into the relationship between income level and conflict severity.

In Model 6, all variables are significant at least at the 5 % level. The N has now increased to 249. The adjusted R-squared remains higher than in Models 1 and 2, indicating that controlling for transnational and actor-specific variables enables explanation of more of the variation in conflict severity. Based on the results from Model 6, I draw conclusions re-

garding all remaining hypotheses except change over time, which is the subject of the next section.

Although the coefficients on duration and duration squared are a bit weaker than in preceding models, they have the same signs and remain significant. The main features of the relationship between duration and severity remain. Total conflict battle deaths increase with duration but the rate of increase weakens with time and should even at one point start decreasing. However, the turning point or maximum of the function is at the logged duration value of 5.96 (i.e. approximately 143 years), considerably higher than the highest observed value of 3.87 (48 years).¹⁰ This means that even though duration has a diminishing marginal effect on severity, the general expectation of longer-lasting conflicts being more severe than shorter ones, expressed in Hypothesis 10, holds for the observations included in the present analysis. The finding of a positive relationship between severity and duration is in line with previous research (Lacina, 2006; Heger and Salehyan, 2007). As far as I am aware, however, alternatives to a simple linear relationship between the two variables have not been explored in published work.

The democracy variable has also remained highly significant in all models. In the final Model 6 it has a value of -.76, indicating that civil conflicts in democracies tend to produce less than half the number of battle deaths seen in conflicts in non-democratic countries.¹¹ There is thus strong support for Hypothesis 1 which anticipated this type of difference. Both the sign and the strength of this relationship are in accordance with what others have found (Lacina, 2006; Heger and Salehyan, 2007).

Broadly, the same goes for the results regarding ethnic polarisation and conflict onset during or after the Cold War. That the coefficient on the Cold War variable remains strongly positive is somewhat surprising given that it was used by Lacina (2006) as a proxy for foreign support. If this variable did indeed capture some of the effect of outside assistance it would have been expected to decrease in strength as indicators of actual support were included in the analysis. I discuss this further in the context of alternative time variables in Section 4.2.4 below.

¹⁰ For the quadratic function $\hat{y} = \hat{\beta}_0 + \hat{\beta}_1x + \hat{\beta}_2x^2$ where \hat{y} is the predicted value of the dependent variable, the $\hat{\beta}_k$ s are OLS estimates and x an independent variable, and with $\hat{\beta}_1 > 0$ and $\hat{\beta}_2 < 0$, the turning point x^* is given by $x^* = |\hat{\beta}_1 / (2\hat{\beta}_2)|$ (Wooldridge, 2009:193).

¹¹ The exact percentage change in the dependent variable, \hat{y} , is given by $\% \Delta \hat{y} = 100 * [\exp(\hat{\beta}_k \Delta x_k) - 1]$, where $\hat{\beta}_k$ is the estimated effect and Δx_k is the change in the independent variable (Wooldridge, 2009:190).

Ethnic polarisation has a strong negative effect on conflict severity. This came as a surprise to Lacin (2006:287) and may appear counterintuitive but the fact that it reappears here warrants the robustness of the finding. There is thus strong support for Hypothesis 2. As the main contribution of the present study is an investigation of the role of transnational factors, alternative operationalisations of the internal ethnic dimension have not been included. There certainly appears to be an opening for future research here, however. The choice of 8 % as the threshold minority size for detecting 'polarisation' may appear somewhat random and other indicators, perhaps including measures of political salience of an ethnic group, might provide additional insight (see e.g. Cederman, Buhaug and Rød, 2009). More theoretical work, providing possible explanations for the negative relationship between the presence of a sizable ethnic minority and conflict severity, is also needed.

Two indicators of transnational factors are included in the final model. Rebel presence in another state is significant but the effect has the opposite sign of what was expected. The results indicate that conflicts where this transnational factor is present are about 51 % less severe than where rebels are confined to domestic territory. A possible post-hoc explanation for this can be that rebel bases abroad function as a safe-haven and hide-out away from government repression more than as a source of additional capabilities used to increase the level of fighting at home (Salehyan, 2007). In cases where insurgents can retreat across an international border rather than having to fight it out with state forces, the overall casualty numbers could consequently be lower. Such activity has, for example, been seen in the present conflict in Darfur, Sudan where rebels from the Justice and Equality Movement (JEM) and the Sudan Liberation Army (SLA) have operated out of bases and refugee camps in neighbouring Chad (Flint and de Waal, 2008; Mamdani, 2009).

Another relatively strong and significant indicator of the overall relationship between foreign support and civil conflict severity is non-state military support for rebels. This effect has the expected sign. Conflicts where rebels receive military support from a foreign non-state entity or group are about 2.6 times as severe as conflicts where such support is not present, all else equal. Of a total of four indicators of transnational support, then, two turned out to be significant and one had the expected sign. With regards to Hypothesis 14, which anticipated a positive relationship between such support and conflict severity, it is seen that both the type of support and the identity of the provider must be taken into account. Recall that support from a foreign government was found not to have a significant

impact on severity.¹² Rebel presence abroad, which can but need not be with the blessing of the host state, is associated with less deadly conflicts. Non-state support for an insurgency has a significant positive effect on severity only when it is of a military kind. On a more general level, these findings certainly provide support for employing more actor-specific and less aggregated measures when investigating civil war (Cederman and Gleditsch, 2009).

The final variable included in Model 6 is also of an actor-specific kind, namely whether or not the rebel group in question managed to control territory. This indicator was presented in Chapter 3 as one among three measures of rebel group strength. While the rebels' relative power in relation to the government and whether or not they featured a central command structure have been found not to have a significant impact on civil conflict severity, conflicts where rebels control territory tend to be about 2.8 times as deadly as other conflicts, according to the results from Model 6.

There is thus some support for Hypothesis 11 which expected relatively strong rebel groups to feature in more severe civil conflicts, but again with variation between different measures. It has previously been found that conflicts where rebels control territory tend to last longer (Cunningham, Gleditsch and Salehyan, 2009a). The present study reveals that this characteristic also features in more severe conflicts, even when duration is controlled for.

4.2.4 The Time Dimension and the Sample Selection Problem

Until now, no new time variables have been included in the model but I have argued that the Cold War variable has represented the time dimension. Table 4.5 on the following page reports results from Models 7, 8 and 9 where alternative time variables are included.

¹² An indicator of state to state support was not included since the direction of causality between such support and civil conflict severity is unclear, as discussed in previous chapters. For a moment disregarding this endogeneity problem and including a binary indicator for such support in Model 6 reveals that the resulting coefficient is positive but not statistically significant. This finding is interesting given that previous studies have found foreign intervention in support of the government side to make conflicts more severe (Heger and Salehyan, 2007).

Table 4.5: OLS regressions for battle deaths. Adding time variables.

	<i>Model 7</i>			<i>Model 8</i>			<i>Model 9</i>		
<i>Independent variable</i>	$\hat{\beta}$	<i>SE</i>	<i>p-value</i>	$\hat{\beta}$	<i>SE</i>	<i>p-value</i>	$\hat{\beta}$	<i>SE</i>	<i>p-value</i>
Ln Duration	2.32	.32	<.001	2.38	.30	<.001	2.35	.30	<.001
Ln Duration ²	-.25	.10	.016	-.25	.09	.008	-.24	.09	.011
Democracy	-.75	.25	.004	-.77	.26	.004	-.81	.26	.002
Ethnic polarisation	-.94	.41	.023	-.95	.41	.023	-.98	.41	.020
Cold War	.56	.37	.134	.13	.59	.819			
Rebel presence in other state(s)	-.65	.28	.021	-.73	.28	.012	-.78	.27	.005
Non-state military support for rebels	.95	.29	.002	.92	.27	.001	.93	.28	.001
Rebel territorial control	.99	.26	<.001	.95	.25	<.001	1.01	.27	<.001
Conflict onset 1979-1991	-.43	.32	.180						
Conflict onset 1992-2003	-.35	.42	.405						
Conflict onset 1940s				-.05	.95	.959			
Conflict onset 1950s				.37	.82	.651			
Conflict onset 1960s				-.29	.75	.696			
Conflict onset 1970s				.18	.83	.827			
Conflict onset 1980s				-.48	.64	.453			
Conflict onset 1990s				-.90	.40	.027	-.91	.22	<.001
Constant	5.90	.54	<.001	6.30	.60	<.001	6.37	.43	<.001
<i>N</i>	249			249			249		
<i>R</i> ²	.63			.64			.64		
\bar{R}^2	.62			.62			.63		

Heteroskedasticity-consistent standard errors are used, clustered by country.

p-values are of two-tailed significance tests.

Model 7 includes the same variables as Model 6 plus two additional binary indicators of time period. The pre-1979 period is the base group. Both of the two new variables have the expected negative sign, indicating that conflicts starting after 1979 were less severe than earlier ones, but both of them fail to attain statistical significance. The other results are robust to the inclusion of these new variables, with mostly only slight changes in effects and p -values, but with one notable exception. The coefficient on the Cold War variable is weakened and is now not significant at a conventional level. Its p -value is lower than that of the two new time dummies but it is clearly sensitive to their inclusion.¹³

These results strengthen the argument that the Cold War variable is simply a time indicator but it clearly remains a more powerful such indicator than the alternative ones. This is the case even though the new time period variables were based on trends in severity over time, as was apparent in Figure 3.7.

In Model 8, another set of time variables are employed. Seven variables categorise conflicts on the basis of in which decade they started. The base group here is conflict onset in 2000 or later. The reported effects vary in terms of direction. Only one of the decade effects are statistically significant. The coefficient on conflict onset in the 1990s is by far the strongest, with a value of $-.90$, and has a low p -value of 0.027 . That it is this variable which attains statistical significance is probably owing to the fact that the 1990s was the decade which saw by far the highest number of conflict onsets, 109 compared to 44 for the 1980s which saw second-most onsets. Interestingly, the coefficient on the Cold War variable is now very weak, at $.16$, and is far from being statistically significant. Model 8 is thus the first model that features a significant time variable that is not the Cold War variable.

Onset during the 1990s is a more powerful indicator of variation in conflict severity over time than a Cold War dummy variable. A result that is not reported in Table 4.5 is that if all time variables except the Cold War and the 1990s variables are removed, the Cold War variable remains weak and non-significant while the 1990s variable remains significant with a p -value of $.032$. Model 9, finally, includes onset during the 1990s as the only time variable. It is now significant even at the 0.1% level and strong.

These findings should be treated with care, however. That the Cold War variable is 'only' a time dummy is evident per definition and that it had little to offer as a proxy for

¹³ If only one alternative time indicator is included, the Cold War variable remains significant while the other is non-significant.

transnational support was shown earlier. The finding that it can be replaced by another time indicator, which is also very similar, only reaffirms this. It should also be noted that conflicts starting in the 1990s have a higher probability to still be ongoing after 2003, the last year included in the dataset. 13 percent of conflicts with their first recorded active year in the 1990s were still active in 2004 compared to nine percent for the 1980s.¹⁴ Underestimating the total conflict battle deaths is thus a higher risk for conflicts starting in the last decade of the millennium than for previous ones. For this reason, an analysis of trends in total conflict battle deaths will almost be bound to find that the most recent conflicts are less severe than others. On the other hand, Figure 3.7, which plotted the logged number of battle deaths against conflict start date, showed that a decline in battle deaths per conflict has been visible since the late 1970s.

The most important cautionary note also relates to what was revealed by Figure 3.7. That the average level of conflict severity has been lower since the early 1990s is not due to all conflicts being less severe but rather that many more low-severity conflicts were added to the picture compared to previous periods. Figure 3.1 showed that the level of global civil war battle deaths was actually relatively high in the 1990s, although lower than in the 1980s. The surge in the number of conflict onsets in the 1990s illustrates the importance of the limitation following from the sample selection problem discussed earlier in Chapter 3. Since the present study only includes actual conflict-occurrences in the analysis, the heightened risk of conflict onset in the 1990s is not taken into account. Why did so many more conflicts with low severity break out in the 1990s? For some conflicts, in particular in the Balkans and in former Soviet republics, weakened central authority, directly related to the end of the Cold War, played a role but these only constitute a small share of the total set of conflicts. More research is needed here.

Hypothesis 8 anticipated a finding of declining civil conflict severity since the end of the Second World War. There is not a clear linear trend but average conflict severity has indeed been lower in later periods. On the other hand, this seemingly positive trend should not be considered in isolation from the observations that the global level of battle deaths was relatively high throughout both 1980s and 1990s and that the 1990s saw a surge in the number of conflicts. With these caveats Hypothesis 8 is considered confirmed.

¹⁴ The ratio is obviously highest for the 2000s which until 2003 had seen 18 new or reignited conflicts, of which 6 (33 percent) were still active in 2004.

Time period effects have not been adequately explored in the civil war literature (Hegre and Sambanis, 2006:529). The most important conclusion to be drawn from the results in Table 4.5 may be that the time dimension should be explored further, both with regards to the probability of conflict onset and severity.

4.2.5 Alternative Measures of Severity

I mentioned in Chapter 3 that for some conflicts no best estimate of total battle deaths is available. For most observations the high and low estimate of battle deaths are different from the best estimate, indicating that there is a degree of uncertainty present regarding the actual number of conflict fatalities. Such uncertainty will consequently also apply to the results presented above.

In order to assess the impact of deviating estimates of the value on the dependent variable I rerun model 9 with two alternative estimates of battle deaths – Model 10 employing low estimates and Model 11 the high estimates. The results are robust to this change in model specification.

Table 4.6: OLS regressions for battle deaths. Robustness check with low (Model 10) and high (Model 11) estimates of total conflict battle deaths.

<i>Independent variable</i>	<i>Model 10</i>			<i>Model 11</i>		
	$\hat{\beta}$	<i>SE</i>	<i>p-value</i>	$\hat{\beta}$	<i>SE</i>	<i>p-value</i>
Ln Duration	2.27	.29	<.001	2.30	.31	<.001
Ln Duration ²	-.19	.10	.060	-.24	.09	.012
Democracy	-.64	.28	.026	-1.01	.28	<.001
Ethnic polarisation	-1.12	.39	.006	-.94	.42	.027
Rebel presence in other state(s)	-.86	.28	.003	-.53	.26	.049
Non-state military support for rebels	.76	.28	.009	.82	.25	.001
Rebel territorial control	.97	.24	<.001	.93	.25	<.001
Conflict onset 1990s	-.60	.26	.023	-.80	.21	<.001
Constant	6.00	.42	<.001	6.55	.43	<.001
<i>N</i>	265			265		
<i>R</i> ²	.61			.62		
\bar{R} ²	.60			.61		

Heteroskedasticity-consistent standard errors are used, clustered by country. *p*-values are of two-tailed significance tests.

All coefficients remain significant at least at the five percent level. There are some changes with regards to strength of effects, but no changes in sign. I conclude from this that the results presented and discussed above appear to be credible. The higher *N* in Models 10 and 11 lends further confidence to the results. Table 4.7 summarises the conclusions regarding the 15 hypotheses.

Table 4.7: Summary of findings.

<i>Hypothesis (given on page)</i>	<i>Finding</i>	<i>In model(s)</i>
H1 Democracy (p. 12)	Confirmed	Model 6
H2 Ethnic polarisation (p. 12)	Confirmed	Model 6
H3 Religious polarisation (p. 12)	Confirmed	Models 3 and 4
H4 Population (p. 12)	Confirmed	Models 3 and 4
H5 Income level (p. 12)	Confirmed	Model 5/6 [†]
H6 Military quality (p. 12)	Confirmed	Model 5
H7 Rough terrain (p. 12)	Confirmed	Models 3 and 4
H8 Declining severity (p. 13)	Confirmed [‡]	Models 6 and 9
H9 World regions (p. 13)	Rejected	Model 5
H10 Duration (p. 14)	Confirmed	Model 6
H11 Rebel strength (p. 15)	Confirmed [±]	Model 6
H12 Territorial conflict (p. 16)	Rejected	Models 3 and 4
H13 Ethnic ties (p. 20)	Rejected	Model 5
H14 Transnational support (p. 22)	Not conclusive [‡]	Model 6
H15 Neighbouring conflict (p. 25)	Rejected	Models 3 and 4

[†] The GDP per capita variable is statistically significant in Model 5 but not if added to Model 6.

[‡] Conflicts were on average less severe after 1989/during the 1990s but there were more conflicts and it may be warranted to take the increased risk of conflict into account.

[±] One of three operational measures of rebel strength, ability to control territory, has a significant effect.

[‡] Two of four indicators of transnational support are significant. Non-state military support for rebels has the expected positive effect while rebel presence in another state has an unexpected negative effect.

4.3 Limitations

Some methodological limitations were noted in Chapter 3 and the sample selection problem was elaborated upon in Section 4.2.4 above. Other specific limitations follow from actual operationalisations in the present study. In Chapter 2 I argued for approaching the subject of civil wars at a lower aggregation level than has previously been common. The present chapter has presented results from analyses where new actor and location specific data have been employed. Moving towards more specific, micro-level data on important explanatory variables can yield new insight and allow for distinguishing between factors that were previ-

ously lumped together in one category (Cederman and Gleditsch, 2009). Validity of operationalisations can be improved, as seen with regards to recording actual transnational support for rebels rather than using onset during the Cold War as a proxy.

On the other hand, this approach, at least in theory, presents the problem of infinite regression towards lower and lower levels of aggregation (Sambanis, 2004b). Building new datasets is often a labour-intensive and costly affair, and these costs must be weighed against potential benefits of new results. It remains a strategic choice of the researcher to decide at what point one has disaggregated 'enough'. Still, this study is not presented as the final answer to what a disaggregated approach to transnational dimensions of civil conflict severity can tell us. Below I outline how more specific data on transnational ethnic linkages, actual civil war interaction and transnational support to the state conflict party may yield additional insights about the effects of transnational dimensions.

The present study did not find a significant effect of transnational ethnic ties when the operationalisation is simply one of detecting the presence of 'similar' ethnic groups in different countries, not actual ethnic affinities. This means that ethnic linkages are recorded regardless of whether actual affinities exist between the groups, although the likelihood that such affinities exist should certainly be higher than between two randomly selected groups. Also, affinities between groups who are not treated as 'the same' in the source data are excluded. For example, an ethnic tie is registered between Jews in Israel and the United States, but not between African Americans on the one hand and Southern Sudanese on the other. There is thus some potential for increasing the validity of operational definitions of transnational linkages.

Further, the methodological reification of ethnic groups disregards the non-monolithic character of such groups (Cederman, 2002). However, while there certainly is likely to be differing views within, for example, the Zaghawa community in Chad with regards to supporting the Justice and Equality Movement in Sudan, what has been relevant for the purpose of this study has been if this ethnic linkage has encouraged support at all, whether or not actual support provided represents the whole or even a majority of the Zaghawa in Chad.

Another specification issue is that a simple measure of whether or not a conflict took place in a neighbouring country at the time does not detect actual connections between two conflicts. Many cases of neighbouring country conflict are of obvious marginal relevance to

each other. Dynamics of small-scale local conflicts in India have in many cases been quite independent of conflicts in Pakistan, Nepal, China or Myanmar for example. The inclusion of a variable on a neighbouring conflict zone at the border was an attempt to capture more of actual civil conflict interaction but it may not have been specific enough. Measures of actual flows of arms and military knowledge, if at all obtainable, may or may not yield other conclusions than the ones following from the above analysis.

There is also a time dimension to civil war interaction. The operational measure employed here was one of detecting if at least one contiguous state had experienced active conflict in at least one year of the period in which the conflict in question was active. Given the causal reasoning around geographical flows and demonstration effects, a neighbouring conflict may be more influential in the early phases of the conflict than towards the end. Conflicts that are interconnected need also not be ongoing at the same time. The interstate conflict and genocide in Rwanda is the direct backdrop for the continued presence of Hutu rebels in eastern Democratic Republic of Congo (International Crisis Group, 2005b).

Peace may also be contagious (Buhaug and Gleditsch, 2008). The cessation of hostilities next door could potentially help solve the domestic conflict and thus influence severity by impacting on duration (Gleditsch, 2007). While I found no significant effect of neighbouring civil war on civil conflict severity there may thus still be room for more research on this relationship.

The above results indicate that some types of transnational support for rebels significantly impact on civil conflict severity. While this study represents an improvement with regards to measures of such support, the direction of causality problem regarding state support for the government conflict party remains. Recall that deciding theoretically if the primary role outside government intervention or assistance in favour of the government is to escalate a conflict or if it usually comes as a reaction to the scale of fighting is problematic on an overall level.

If it would be possible to differentiate between state to state assistance in accordance with its causal relationship with conflict severity, this would no doubt be an important step forward for research on civil conflict severity. A close investigation of the dynamics of each conflict in the dataset where such support was present might enable the researcher to exclude those cases where outside involvement came as a response to an already high level of violence.

4.4 Summary

Through several sets of models the results presented in this chapter reveal that there are indeed significant transnational dimensions of civil conflict severity. Non-state military support for rebels is associated with more severe conflicts. Unexpectedly, rebel bases in other states have a negative effect on conflict severity but I reasoned that this characteristic may actually lead to a decreased level of contact and thus less fighting between the conflict parties. Some transnational factors, like transnational ethnic linkages, neighbouring civil war and state support for insurgencies, were not found to have significant effects. In Part 4.3 I suggested that possible data improvements which could enable closer investigation of some of the relationships.

The inclusion of replication variables and other domestic and actor-specific factors also yielded some interesting results. Firstly, I discovered that, contrary to what has so far been believed, the relationship between duration and severity of internal armed conflicts is not linear. Longer-running conflicts are more severe, but also generally less intense, than shorter ones. Secondly, conflicts increase in severity when rebels manage to control territory, but no significant difference is found between conflicts fought over territory rather than over government. Finally, while a variable indicating conflict onset during the Cold War has previously been used as a proxy for foreign support for a conflict party, the empirical analysis above has shown that this variable remains significant when more direct measures of transnational support are included. The investigation of change over time showed that average conflict severity has been lower in later years but this coincided with an increase in conflict frequency and high levels of global conflict severity.

5 Conclusion

5.1 Introduction

The present inquiry is coming to an end. In this final chapter I conclude by reviewing the contributions of this study and also by looking forward by outlining possible roles for future research. Section 5.2 discusses to what extent advances have been made with regards to theoretical developments and empirical findings. Some practical interpretations of the findings are also considered. In Section 5.3 I complement the discussion of the utility of accessing more specific data on transnational factors in the previous chapter by reviewing the potential for disaggregating domestic factors as well as pointing to other potential focus areas of prospective inquiries.

5.2 Transnational and Other Dimensions of Civil Conflict Severity

The primary goal of this research has been to expand the existing explanatory framework pertaining to civil conflict severity by taking transnational dimensions into account. In doing this I have sought to remedy three shortcomings in the existing literature on civil war. Firstly, prior to the few studies of severity of intrastate war preceding the present one, general work on civil conflict has been granting actual conflict violence surprisingly scant attention. I have built on and extended existing work on civil conflict severity in order to further our understanding of why the level of violence is higher in some conflicts than in others.

Secondly, both the wider literature on civil war and in particular the work on severity of civil conflicts have long been hampered by an implicit reliance on a model of the state as a 'closed polity'. This has led to an overemphasis on domestic factors and disregard of transnational dimensions of conflict onset and dynamics. The study presented here has drawn on recent theoretical and data developments with regards to the importance of transnational factors in the study of onset and duration of conflict to improve on explanations of variation in interstate conflict severity.

Thirdly, I have argued in favour of ‘disaggregating civil wars’, in the sense that more attention should be paid to the identities, goals and capabilities of sub-national actors. Up until very recently, quantitative studies have almost exclusively relied on highly aggregated measures of country characteristics in order to explain risk of conflict outbreak, duration and severity. This study has built on theoretical developments emphasising the dyadic, or even polyadic, nature of conflict as well as new actor-specific data to bring the study of civil conflict severity forward.

These existing inadequacies and suggested remedies informed the theoretical framework developed in Chapter 2. A total of 15 hypotheses were formulated, of which the last three represented the main contribution of the study. Based on a review of relevant literature I anticipated that the presence of transnational ethnic ties, transnational support for a conflict actor and neighbouring civil war would all be associated with more severe conflicts.

Although not all hypotheses found empirical support, the theoretical model developed in Chapter 2 arguably represents theoretical advancement. The sub-field of conflict severity is new and has so far only seen a handful of contributions. It can, however, benefit from drawing on the already extensive literature on risk of conflict onset and on conflict duration. The present study has embraced and sought to demonstrate the benefits of recent trends in the conflict literature emphasising the necessity of looking at actual conflict violence and taking actor-specific and transnational dimensions into account.

The explanatory hypotheses were tested through analyses of both well-established and newly available data by use of conventional Ordinary Least Squares (OLS) regression analysis. The results represent an expansion of our knowledge about causes of variation in civil conflict severity, particularly regarding transnational factors but also more generally. Of the three transnational dimensions, ethnic linkages and some types of support for rebels were found to affect conflict severity. Neighbouring conflict, as operationalised here, was not found to significantly explain variation in the dependent variable.

The relationships between transnational ethnic linkages and neighbouring conflict on the one hand and conflict severity on the other are also not found to be significant, perhaps owing to the fact that actual support is controlled for. Detailed data allowed for differentiating between a number of different kinds of transnational support. Non-state actor military support for rebels was found to increase the number of battle deaths in internal armed con-

flicts. Rebel presence in one or more foreign states, however, were unexpectedly found to decrease conflict severity. I suggested that the primary role of this factor might be to increase the ability of insurgents to evade government repression rather than to add to their capacity to inflict damage.

In addition, it was discovered that conflict intensity, understood as conflict fatalities per year, vary with the length of the conflict, contrary to what previous work has implicitly assumed. I found that conflict intensity decreases as conflicts drag on. For conflict severity this means that this dependent variable is a curve-linear, not simply a linear, function of duration. While the effect of an added year is relatively large for short conflicts, this marginal effect decreases over time. It was also found that severity of intrastate conflicts has varied over time, with more recent conflicts being less severe than conflicts in the Cold War era, and that conflicts are more severe when rebels manage to control territory. Previous findings of democracy and ethnic polarisation being associated with less severe conflicts were replicated in the present study.

Together, these findings constitute a considerable improvement on an explanatory model of civil conflict severity. There should be no doubt that transnational factors ought to be an integral part of such an explanatory framework. It has also been shown that findings on conflict severity do not mirror perfectly findings from the conflict onset literature, pointing to the need for studying it separately. Finally, the significance of several actor-specific variables lends support to the call for a more disaggregated approach to the study of civil war.

Apart from the strictly scientific significance of the results, a more practical interpretation is also possible. Assuming that the international community generally seeks to limit the severity of internal wars, the explanatory model of conflict severity might provide some guidance as to what factors deserve most attention. As noted in the introduction, civil conflicts are by far the dominant form of warfare today and affect the lives of millions of people worldwide.

In particular, the potential gain from limiting non-state military support for insurgents appears considerable. The negative effect of rebel presence in other states should probably be not be interpreted as warranting neglect, or even encouragement, of such activity but it appears that more often than not this is not something that leads to a higher level of violence.

The result regarding democracy lends support to the expectation that a more democratic world will not only see fewer but also less severe conflicts. On the other hand, trying to encourage regime change by providing support for rebels or taking violent action can be counterproductive, at least in the short run. Finally, with regards to duration, the findings indicate that there is most to be gained from seeking to resolve conflicts early on, not only because every added active year means more loss of life but also because intensity is highest early on.

5.3 Future Research on the Severity of Armed Conflict

Looking for an answer to a problem may yield new insight but commonly spawns new questions in addition, so also in this case. While some new knowledge about the role of transnational, as well as non-transnational, dimensions of civil conflict severity has been generated, some limitations both with regards to theory, methodology and operationalisations could beneficially be addressed in future research.

With regards to theory, more effort could be made to specify the causal relationships between independent variables and civil conflict severity. Findings that were not anticipated on the basis of the theoretical framework developed in Chapter 2 are in need of further attention. Why is it that the marginal effect of duration decreases with time? Why are conflicts where rebels are present in other states considerably less severe? A more comprehensive explanation for why conflicts cause fewer battle deaths in ethnically polarised societies is also needed. A promising trend in the discipline is to uncover causal mechanisms underlying observed correlations (Checkel, 2008a). One possible extension of the present study could thus be to investigate causal mechanisms through process tracing (Nome, 2008).

Methodologically, Chapter 3 made reference to a problem of sample selection bias that has remained unresolved in the present study. While the literature on both conflict duration and severity does not commonly take the risk of conflict outbreak into account it might beneficially serve as an additional robustness check. This task is here left to future research.

Also empirically, within the present methodological framework, openings for future inquiries exist. Some possible improvements following from more specific data on transnational factors have already been outlined in Chapter 4. Further disaggregation of certain do-

mestic variables could also be feasible. One type of disaggregation which has been employed here only to a limited extent is that of specifying geographical location. While a conventional approach is to consider countries either 'at war' or 'at peace', in many instances actual insurgencies only affect a limited part of a state's territory (Cederman and Gleditsch, 2009:487). Specific data on variables such as population, income per capita and roughness of terrain for actual conflict zones would arguably be more relevant to research on conflict severity (Buhaug, Gates and Lujala, 2009; Hegre, Østby and Raleigh, 2009). Also, employing data on the specific ethnic groups involved in the conflict and their relative demographic, economic and political base could prove rewarding (Cederman, Buhaug and Rød, 2009; Østby, 2008).

With regards to the dependent variable of conflict severity, different authors have already called for a distinction to be made between battle deaths inflicted by the government and non-state parties respectively. While Heger and Salehyan (2007) assume that the government-induced deaths are predominant, Weinstein (2007:5) observes this tends to vary between conflicts. In Chechnya the Russian government forces have been responsible for most of the killings while the violence in Southern African civil wars have in many cases mainly been carried out by insurgents. Data sourced from the Battle Deaths Dataset, which does not distinguish between deaths induced by either side (Lacina and Gleditsch, 2005), have in individual studies been used as indicating either violence inflicted by the government side (Heger and Salehyan, 2007) or by insurgents (Weinstein, 2007:306). Such differentiation could be an interesting extension of the present study. Data actually specifying which actor inflicted the casualties would provide more valid grounds for such an investigation.

This study, as is the case with much contemporary conflict research, has concerned itself squarely with intrastate conflicts. One explanation for predominant focus on domestic conflict can be found in empirics. Armed conflict between states has become increasingly rare and was not empirically observed in the period 2004 to 2007 (Harbom and Wallensteen, 2009). However, less empirical frequency should not preclude any academic interest in the phenomenon. Another possible extension of research on severity of civil conflict is therefore to look at variation in battle deaths caused by international armed conflicts. The classical contributions by Richardson (1948; 1960) could certainly warrant more attention in that regard (Cederman, 2003). All in all, there is certainly room for more research on the severity of armed conflict, both with regards to transnational dimensions and in more general terms.

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Appendices

A.1 List of Internal Armed Conflicts, 1946-2003

Table A.1 lists the 309 units of observation, i.e. all armed conflicts registered in the Uppsala/PRIO Armed Conflict Dataset (ACD) from 1946 through 2003. The observations are sorted alphabetically by name of the country in which the conflict took place. For several countries, e.g. Azerbaijan, there are observations with overlapping time frames. This is because several distinct conflict dyads were active at the same time. The number of battle deaths given for each conflict is the best estimate. If there is no best estimate, the low (LE) and high estimate (HE) are given on the form [LE;HE]. The ID column contains a unique numerical identifier for each observation. The actual number carries no meaning other than that it is based on the ACD conflict IDs. It is included here to allow for cross-referencing with Table A.2 in the second appendix.

Table A.1: Internal Armed Conflicts 1946-2003

ID	Country	First year	Last year	Battle deaths
137.1	Afghanistan	1978	1988	480,000
137.2	Afghanistan	1989	2001	76,000
137.3	Afghanistan	2003	2003	1,200
191	Algeria	1991	2003	91,100
131.1	Angola	1975	1995	143,750
192.1	Angola	1991	1991	25
192.2	Angola	1994	1994	50
192.3	Angola	1996	1998	100
131.2	Angola	1998	2002	15,725
192.4	Angola	2002	2002	315
50.1	Argentina	1955	1955	500
50.2	Argentina	1963	1963	25
50.3	Argentina	1974	1977	2,954
193.1	Azerbaijan	1992	1994	19,200
201.1	Azerbaijan	1993	1993	60
201.2	Azerbaijan	1995	1995	80
126	Bangladesh	1975	1992	3,263
1.1	Bolivia	1946	1946	1,000
1.2	Bolivia	1952	1952	600
1.3	Bolivia	1967	1967	82
194	Bosnia-Herzegovina	1992	1995	40,413
203	Bosnia-Herzegovina	1993	1994	13,687
202	Bosnia-Herzegovina	1993	1995	900
165	Burkina Faso	1987	1987	100
90.1	Burundi	1965	1965	50
90.2	Burundi	1991	1992	650
90.3	Burundi	1994	2003	7,305

103.1	Cambodia	1967	1975	250,000
103.2	Cambodia	1978	1998	91,500
158	Cameroon	1984	1984	500
222	Central African Republic	2001	2002	219
91.1	Chad	1966	1972	1,750
91.2	Chad	1976	1984	17,070
91.3	Chad	1986	1987	5,440
91.4	Chad	1989	1994	[7,150;8,399]
91.5	Chad	1997	2002	1,376
125	Chile	1973	1973	2,095
3	China	1946	1949	1,200,000
18	China	1947	1947	1,000
39.1	China	1950	1950	5,000
39.2	China	1956	1956	4,000
39.3	China	1959	1959	67,000
92	Colombia	1966	2003	26,040
167	Comoros	1989	1989	27
213	Comoros	1997	1997	56
214.1	Congo	1993	1994	175
214.2	Congo	1997	1999	9,500
214.3	Congo	2002	2002	116
27	Costa Rica	1948	1948	2,000
225	Cote D'Ivoire	2002	2003	1,100
195.1	Croatia	1992	1993	200
195.2	Croatia	1995	1995	750
45.1	Cuba	1953	1953	28
45.2	Cuba	1957	1958	5,000
45.3	Cuba	1961	1961	279
68	DR Congo/Zaire	1960	1962	583
69	DR Congo/Zaire	1960	1962	[75;999]
86.1	DR Congo/Zaire	1964	1965	29,965
86.2	DR Congo/Zaire	1967	1967	778
86.3	DR Congo/Zaire	1977	1978	919
86.4	DR Congo/Zaire	1996	2001	149,000
184.1	Djibouti	1991	1994	515
184.2	Djibouti	1999	1999	25
93	Dominican Republic	1965	1965	3,276
196	Egypt	1993	1998	1,179
120.1	El Salvador	1972	1972	300
120.2	El Salvador	1979	1991	55,000
142	Equatorial Guinea	1979	1979	185
130.1	Eritrea	1997	1997	95
130.2	Eritrea	1999	1999	239
130.3	Eritrea	2003	2003	57
70.1	Ethiopia	1960	1960	662
78	Ethiopia	1964	1991	199,668
133.1	Ethiopia	1976	1983	[29,675;49,545]
70.2	Ethiopia	1976	1991	16,000
168	Ethiopia	1989	1991	[75;749]
219.1	Ethiopia	1989	1991	[75;2,997]
133.2	Ethiopia	1996	1996	[25;250]
168.3	Ethiopia	1996	1996	140
211.1	Ethiopia	1996	1997	50
133.3	Ethiopia	1998	2002	725

211.2	Ethiopia	1999	1999	[25,999]
219.2	Ethiopia	1999	2003	1,150
73	France	1961	1962	2,360
87	Gabon	1964	1964	30
149	Gambia	1981	1981	650
185	Georgia	1991	1993	240
198.1	Georgia	1992	1992	950
197	Georgia	1992	1993	2,500
98.1	Ghana	1966	1966	27
98.2	Ghana	1981	1981	50
98.3	Ghana	1983	1983	26
4	Greece	1946	1949	154,000
36.1	Guatemala	1949	1949	40
36.2	Guatemala	1954	1954	48
36.3	Guatemala	1965	1995	46,300
111	Guinea	2000	2001	1,100
216	Guinea-Bissau	1998	1999	1,850
186.1	Haiti	1989	1989	40
186.2	Haiti	1991	1991	250
19	Hyderabad	1947	1948	[2,000;19,998]
29.1	India	1948	1951	[4000;39,996]
54.1	India	1956	1959	1,487
54.2	India	1961	1968	566
99	India	1966	1968	1,500
29.2	India	1969	1971	150
139.1	India	1978	1988	1,175
152.1	India	1982	1988	175
156	India	1983	1993	18,875
227.1	India	1989	1990	85
169	India	1989	2003	22,952
170.1	India	1990	1991	180
29.3	India	1990	1994	1,381
139.2	India	1992	1993	79
54.3	India	1992	1997	222
152.2	India	1992	2000	355
227.2	India	1993	2003	571
170.2	India	1994	2003	672
139.3	India	1995	1995	25
29.4	India	1996	2003	2,653
139.4	India	1997	2003	507
54.4	India	2000	2000	294
152.3	India	2003	2003	150
40	Indonesia	1950	1950	5,000
46.1	Indonesia	1953	1953	1,000
46.2	Indonesia	1958	1961	33,444
94.1	Indonesia	1965	1965	750
94.2	Indonesia	1967	1969	2,250
134.1	Indonesia	1975	1989	33,275
94.3	Indonesia	1976	1978	8,500
171.1	Indonesia	1990	1991	1,800
134.2	Indonesia	1992	1992	50
134.3	Indonesia	1997	1998	200
171.2	Indonesia	1999	2003	2,927
6.1	Iran	1946	1946	25

7	Iran	1946	1946	25
6.2	Iran	1966	1968	[75;2,997]
144	Iran	1979	1980	[50;1,998]
143.1	Iran	1979	1982	7,400
6.3	Iran	1979	1988	[4,650;34,697]
143.2	Iran	1986	1988	[75;3,998]
6.4	Iran	1990	1990	50
143.3	Iran	1991	1993	405
6.5	Iran	1993	1993	125
6.6	Iran	1996	1996	27
143.4	Iran	1997	1997	35
143.5	Iran	1999	2001	190
62.1	Iraq	1958	1958	25
62.2	Iraq	1959	1959	2,000
74.1	Iraq	1961	1970	5,000
62.3	Iraq	1963	1963	350
74.2	Iraq	1973	1993	[22,825;119,543]
62.4	Iraq	1982	1984	145
62.5	Iraq	1987	1987	36
62.6	Iraq	1991	1996	[10,250;29,246]
74.3	Iraq	1996	1996	1,500
37.1	Israel	1949	1996	16,959
37.2	Israel	2000	2003	3,266
153	Kenya	1982	1982	318
65.1	Laos	1959	1961	5,000
65.2	Laos	1963	1973	18,500
65.3	Laos	1989	1990	55
63.1	Lebanon	1958	1958	1,400
63.2	Lebanon	1975	1976	64,000
63.3	Lebanon	1982	1986	53,000
63.4	Lebanon	1989	1990	13,700
217	Lesotho	1998	1998	114
146.1	Liberia	1980	1980	27
146.2	Liberia	1989	1995	8,599
146.3	Liberia	2000	2003	4,058
223	Macedonia	2001	2001	145
114	Madagascar	1971	1971	128
64.1	Malaysia	1958	1960	204
83	Malaysia	1963	1966	[100;3,996]
64.2	Malaysia	1974	1975	200
64.3	Malaysia	1981	1981	25
177.1	Mali	1990	1990	150
177.2	Mali	1994	1994	150
205.1	Mexico	1994	1994	110
205.2	Mexico	1996	1996	34
199	Moldova	1992	1992	650
115	Morocco	1971	1971	264
135	Morocco	1975	1989	13,000
136	Mozambique	1977	1992	109,749
24.1	Myanmar	1948	1988	1,025
25.1	Myanmar	1948	1988	24,173
34.1	Myanmar	1949	1949	285
26.1	Myanmar	1949	1963	900
23.1	Myanmar	1949	1992	13,244

56.1	Myanmar	1957	1957	290
67.1	Myanmar	1960	1970	7,400
34.2	Myanmar	1961	1992	17,723
67.2	Myanmar	1976	1988	2,448
26.2	Myanmar	1990	1990	100
24.2	Myanmar	1990	1992	75
25.2	Myanmar	1991	1992	75
56.2	Myanmar	1992	1992	250
67.3	Myanmar	1993	2002	[1,285;6,096]
24.3	Myanmar	1994	1994	25
25.3	Myanmar	1994	1994	25
23.2	Myanmar	1995	1995	25
26.3	Myanmar	1996	1996	33
56.3	Myanmar	1996	1996	33
228	Myanmar	1997	1997	100
23.3	Myanmar	1997	2003	316
72.1	Nepal	1961	1962	250
72.2	Nepal	1996	2003	6,472
140.1	Nicaragua	1978	1979	10,000
140.2	Nicaragua	1981	1989	30,000
178.1	Niger	1992	1992	200
178.2	Niger	1994	1994	200
212	Niger	1996	1997	61
178.3	Niger	1997	1997	28
100	Nigeria	1966	1966	25
107	Nigeria	1967	1970	75,000
61	Oman	1957	1957	32
121	Oman	1972	1975	2000
116	Pakistan	1971	1971	50,000
129	Pakistan	1974	1977	8,800
209.1	Pakistan	1990	1990	46
209.2	Pakistan	1995	1996	325
172	Panama	1989	1989	75
174.1	Papua New Guinea	1989	1990	100
174.2	Papua New Guinea	1992	1996	223
22.1	Paraguay	1947	1947	4,000
22.2	Paraguay	1954	1954	50
22.3	Paraguay	1989	1989	200
164	Peru	1965	1965	69
95.1	Peru	1981	1999	30,869
95.2	Philippines	1946	1954	9,000
10.1	Philippines	1969	1995	24,400
10.2	Philippines	1970	1990	37,250
112.1	Philippines	1993	2003	4,664
112.2	Philippines	1997	1997	50
10.3	Philippines	1999	2003	1350
10.4	Romania	1989	1989	909
52	Russia/Soviet Union	1946	1947	481
175	Russia/Soviet Union	1946	1947	735
11	Russia/Soviet Union	1946	1948	8,620
12	Russia/Soviet Union	1946	1950	17,569
13	Russia/Soviet Union	1990	1990	142
14	Russia/Soviet Union	1990	1991	800
182	Russia/Soviet Union	1993	1993	193

181	Russia/Soviet Union	1994	1996	45,500
204	Russia/Soviet Union	1999	1999	350
206.1	Russia/Soviet Union	1999	2003	48,600
220	Rwanda	1990	1994	5,500
206.2	Rwanda	1997	2002	4,259
179.1	Saudi Arabia	1979	1979	269
179.2	Senegal	1990	1990	200
145	Senegal	1992	1993	400
180.1	Senegal	1995	1995	200
180.2	Senegal	1997	2001	810
180.3	Senegal	2003	2003	34
180.4	Sierra Leone	1991	2000	12,997
180.5	Somalia	1978	1978	520
187	Somalia	1982	1984	450
141.1	Somalia	1986	1996	66,000
141.2	Somalia	2001	2002	264
141.3	South Africa	1966	1988	25,000
141.4	South Africa	1981	1983	75
101	South Africa	1985	1988	3,250
150.1	Spain	1980	1981	121
150.2	Spain	1987	1987	52
147.1	Spain	1991	1992	72
147.2	Sri Lanka	1971	1971	1,630
147.3	Sri Lanka	1984	2001	54,501
117	Sri Lanka	1989	1990	5,025
157.1	Sri Lanka	2003	2003	59
117	Sudan	1963	1972	20,000
157.2	Sudan	1971	1971	38
85.1	Sudan	1976	1976	300
113.1	Sudan	1983	2002	55,500
113.2	Sudan	2003	2003	2,175
113.3	Surinam	1986	1988	300
113.4	Syria	1966	1966	300
162	Syria	1979	1982	15,450
102.1	Tajikistan	1992	1996	41,300
102.2	Tajikistan	1998	1998	100
200.1	Thailand	1951	1951	[25;999]
200.2	Thailand	1974	1982	4,404
43.1	Thailand	2003	2003	25
43.2	Togo	1986	1986	30
248	Togo	1991	1991	25
163.1	Trinidad and Tobago	1990	1990	30
163.2	Tunisia	1980	1980	41
183	Turkey	1984	2003	35,595
148	Turkey	1991	1992	50
159	Uganda	1971	1971	60
188.1	Uganda	1972	1972	200
118.1	Uganda	1978	1979	3,847
118.2	Uganda	1981	1991	108,500
118.3	Uganda	1994	2003	7,506
118.4	United Kingdom	1971	1991	3094
118.5	United Kingdom	1998	1998	55
119.1	Uruguay	1972	1972	53
119.2	Uzbekistan	2000	2000	60

123	Venezuela	1962	1962	400
221.1	Venezuela	1992	1992	183
80.1	Vietnam, Republic of	1955	1964	162,890
80.2	Yemen, Arab Republic	1948	1948	4,000
33.1	Yemen, Arab Republic	1962	1970	50,000
33.2	Yemen, Arab Republic	1980	1982	300
33.3	Yemen, Arab Republic	1994	1994	5,500
207	Yemen , People's Republic	1986	1986	11,500
189	Yugoslavia/Serbia	1991	1991	63
190	Yugoslavia/Serbia	1991	1991	9,050
218	Yugoslavia/Serbia	1998	1999	4,500
122	Zimbabwe/Rhodesia	1973	1979	26,623

A.2 Coding Decisions when Combining NSA and ACD Data

The Non-State Actor (NSA) dataset is constructed as an extension of the Uppsala/PRIO Armed Conflict Dataset (ACD) but since the NSA often lists several conflict dyads and time period observations for one ACD conflict, the two datasets are not directly compatible (Cunningham, Gleditsch and Salehyan, 2009b; Gleditsch et al., 2002). In cases where several NSA observations have been applicable to a single conflict I have chosen either to summarise the all or the most relevant NSA observations or chosen the most relevant observation. Often the values on the individual observations are similar and can easily be aggregated. When this is not the case and observations with deviating values are equally relevant, missing value has been assigned. Regarding presence of transnational support, however, this has been coded as present if at least one rebel group received support for at least part of the conflict, unless this is clearly non-representative of the conflict.

The individual coding decisions are based on a reading of the comprehensive NSA data documentation (Cunningham, Salehyan and Gleditsch, 2009b) and are listed in Table A.2 beginning on the following page. The Conflict column gives the conflict ID based on the variable ID in the ACD, the country in which the conflict took place and the start and end year of the conflict. The NSA observation(s) column gives the observation ID(s) for the NSA observations used. The Decision column reports if the NSA observations were selected among a number of relevant observations and if several observations were summarised. In the column furthest to the right I comment briefly on why the NSA dataset operates with several observations.

Table A.2: Non-state actor data coding decisions

Conflict	NSA observation(s)	Decision	Comment
12.0 Soviet Union 1946-1947	EACD.2.4-55, 58	Summarised	Two opposition groups, the LTSA and the LNPA, with the equal traits were active.
24.1 Myanmar 1948-1988	EACD.2.4-97, 100, 103, 106, 109	Summarised	Two opposition groups, the BCP and the RFM, were active and recorded for different time periods.
25.1 Myanmar 1948-1988	EACD.2.4-115, 118	Summarised	The Arakan People's Liberation Party changed to the Communist party of Arakan during the conflict.
25.1 Myanmar 1991-1992	EACD.2.4-121, 124	Summarised	Two opposition groups were active in the period.
26.1 Myanmar 1949-1963	EACD.2.4-127, 130	Summarised	NMSP replaced MPF after 1958.
29.3 India 1990-1994	EACD.2.4-148, 151	Summarised	Two opposition groups, the Naxalites/PWG and the MCC, with similar traits were active.
29.4 India 1996-2003	EACD.2.4-148, 151	Summarised	See above.
37.1 Israel 1949-1996	EACD.2.4-199	Selected	A number of Palestinian organisations have been opposing Israel. This observation for the PLO is representative.
37.2 Israel 2000-2003	EACD.2.4-202, 214	Selected, summarised	See above. Fatah and Hamas were arguably most important in this time period.
46.1 Indonesia 1953	EACD.2.4-259, 262, 265	Summarised	Three opposition groups, the PRRI, the Permesta Movement and the Darul Islam Movement were active.
46.2 Indonesia 1958-1961	EACD.2.4-268, 271, 274	Summarised	See above.
50.3 Argentina 1974-1977	EACD.2.4-292, 295	Summarised	Two opposition groups with equal traits, the ERP and the Montoneros, were active.
63.3 Lebanon 1982-1986	EACD.2.4-358, 367	Selected, summarised	Both the Lebanese Front and the Lebanese National Movement were active.
64.1 Malaysia 1958-1960			There is no applicable EACD observation even though the conflict and time period is mentioned in the dataset notes. Data on a few variables are assigned based on this source.
65.1 Laos 1959-1961	EACD.2.4-376, 379	Summarised	Two opposition groups, the Pathet Lao and the Neutrals, were active.
67.1 Myanmar 1960-1970	EACD.2.4- 403, 406, 409	Summarised	Several Shan State opposition groups were active.
67.2 Myanmar 1976-1988	EACD.2.4-409	Selected	See above. The SSNPLO is most representative for this time period.
67.3 Myanmar 1993-2002	EACD.2.4-412, 415	Summarised	Two opposition groups, the MTA and the SSA, were active.

70.2 Ethiopia 1976-1991	EACD.2.4-427, 430, 433, 436	Summarised	Several opposition groups were active.
74.2 Iraq 1973-1993	EACD.2.4-454, 457, 460, 463	Summarised	Two Kurdish opposition groups, the KDP and the PUK are recorded in two time periods each.
78.0 Ethiopia 1964-1991	EACD.2.4-484	Selected	Several Eritrean rebel groups were active but the EPLF was dominant for most of the time period.
86.4 DR Congo/Zaire 1996-2001	EACD.2.4-529	Selected	DR Congo has seen a number of simultaneous conflicts. The RCD dominated for most of the relevant period and shared important traits with the previously active AFDL.
90.3 Burundi 1994-2003	EACD.2.4-565, 568, 571, 574	Summarised	Several rebel groups, with many shared traits, were active.
91.1 Chad 1966-1972	EACD.2.4-577, 589	Summarised	The opposition group FROLINAT are recorded in two applicable time periods.
91.2 Chad 1976-1984	EACD.2.4-580, 583, 595	Selected, summarised	Three opposition groups were active and recorded in several applicable time periods.
91.4 Chad 1989-1994	EACD.2.4-592, 601, 604, 607, 610, 613, 616, 619	Summarised	Several opposition groups, with similar traits, were active and recorded in several applicable time periods.
92.0 Colombia, 1966-2003	EACD.2.4-634	Selected	A number of opposition groups are recorded in different periods. FARC has been most important.
95.1 Peru 1965	EACD.2.4-652, 655	Summarised	Two similar opposition groups, the ELN and the MIR, were active.
95.2 Peru 1981-1999	EACD.2.4-658	Selected	Sendero Luminoso (Shining Path) was the most significant of the active leftist guerrillas.
103.1 Cambodia 1967-1975	EACD.2.4-691, 694	Summarised	The Khmer Rouge rebels joined with other opposition groups in 1970.
103.2 Cambodia 1978-1998	EACD.2.4-703	Selected	Several rebel organisations opposed the Vietnam-backed government. The Khmer Rouge was arguably most significant.
112.1 Philippines 1970-1990	EACD.2.4-730, 733	Summarised	The MNLF rebel group is recorded in two time periods.
112.2 Philippines 1993-2003	EACD.2.4-736	Selected	Several opposition groups have been active but the MILF has been the strongest.
118.4 Uganda 1981-1991	EACD.2.4-781, 784, 787, 790, 793, 796, 799, 802, 805, 808, 811	Summarised	A number of armed opposition groups took part in this conflict.
118.5 Uganda 1994-2003	EACD.2.4-814, 817	Summarised	The LRA rebel group is recorded in two time periods.

120.2 El Salvador 1979-1991	EACD.2.4-838	Selected	A number of rebel groups were active but the FMLN was most important.
122.0 Rhodesia/Zimbabwe 1973-1979	EACD.2.4-859, 862, 865, 868	Summarised	Two opposition groups, ZANU and ZAPU, are recorded for two different time periods.
131.1 Angola 1975-1995	EACD.2.4-901	Selected	Both the FNLA and UNITA opposed the MPLA government but the FNLA was sidelined early on.
134.1 Indonesia 1975-1989	EACD.2.4-931, 934	Summarised	The Fretilin rebel group is recorded for two time periods.
137.1 Afghanistan 1978-1988	EACD.2.4-949, 955	Summarised	Two Mujahideen groups with similar traits, the Hezb-i-Islami and the Jamiati-Islami, were active.
137.2 Afghanistan 1989-2001	EACD.2.4-973	Selected	Afghanistan was riven with fighting between a number of groups in this period. UIFSA (Northern Alliance) was active for much of the period and shared important traits with other groups.
139.4 India 1997-2003	EACD.2.4-985, 988	Summarised	Two secessionist groups, the NLFT and the ATTF, have been active.
141.3 Somalia 1986-1996	EACD.2.4-1003, 1012	Selected, summarised	Several opposition groups were active and recorded in several applicable time periods. The SNM and the USC faction were active throughout the conflict period.
146.2 Liberia 1989-1995	EACD.2.4-1039, 1045	Summarised	The NPFL was the most significant opposition group but a splinter group was active in parts of the conflict
150.2 South Africa 1985-1988	EACD.2.4-1069, 1072, 1075	Summarised	ANC, PAC and Azapo were all active opposition groups with similar traits.
152.2 India 1992-2000	EACD.2.4-1078, 1081, 1084	Summarised	Various armed groups have been active in the Manipur conflict
157.1 Sri Lanka 1984-2001	EACD.2.4-1093, 1096	Selected, summarised	Not only the LTTE has conducted violent resistance in Sri Lanka, but it is arguably the most prominent group.
185.0 Georgia 1991-1993	EACD.2.4-1201, 1204	Summarised	The conflict over the Georgian government saw two periods.
187.0 Sierra Leone 1991-2000	EACD.2.4-1210	Selected	Several actors were involved in the Sierra Leone war but the RUF was the prominent opposition group for most of the period.
190.0 Yugoslavia/Serbia 1991	EACD.2.4-1231, 1234	Summarised	Both the Croatian army and Croatian Irregulars fought the Yugoslav army.
191.0 Algeria 1991-2003	EACD.2.4-1240, 1243	Selected, summarised	Different Islamic groups have opposed the Algerian government with the FIS and the GIA being the most prominent.
194.0 Bosnia-Herzegovina 1992-1995	EACD.2.4-1258	Selected	Various elements opposed the newly declared independent Bosnia-Herzegovina, with the forces of the Serbian republic of Bosnia and Herzegovina at the forefront.

195.1 Croatia 1992-1993	EACD.2.4-1267, 1270	Summarised	The army of newly established independent Croatia fought both Serbian Republic of Krajina forces and Serbian irregulars.
196.0 Egypt 1993-1998	EACD.2.4-1276, 1279, 1282	Summarised	The Egyptian government faced armed resistance from three Islamist organisations.
203.0 Bosnia-Herzegovina 1993-1994	EACD.2.4-1312, 1315	Summarised	Forces of the newly established independent Bosnia-Herzegovina fought forces of the Croatian Republic of Bosnia and Herzegovina and Croatian irregulars.
212.0 Niger 1996-1997	EACD.2.4-1339, 1342	Summarised	Two rebel groups with similar traits, the FDR and the FARS, were active.
214.2 Congo 1997-1999	EACD.2.4-1348, 1354, 1357, 1360	Summarised	Several rebel groups were involved in the civil conflict in Congo in this time period.
222.0 Central African Republic 2001-2002	EACD.2.4-1387	Selected	Two rebel groups were active within this time period but the main conflict was between the government and the faction of Francois Bozize.
225.0 Cote D'Ivoire 2002-2003	EACD.2.4-1396, 1399, 1342	Summarised	The government faced armed opposition from three groups.