# Conflict and economic growth in sub-Saharan Africa

# Conflict and Economic Growth in Sub-Saharan Africa

by

## Adedoyin Babajide

A Doctoral Thesis

Submitted in partial fulfilment of the requirements

for the award of

Doctor of Philosophy

of

Loughborough University

August 2018

# Dedication

To

Mum, Dad, and my family

for your unending support.

# Acknowledgment

I would like to express my profound gratitude to my supervisors, Dr Simeon Coleman and Dr Ahmad H. Ahmad for the continuous support of my PhD research work, for their patience, guidance, encouragement, and useful critique of my work. Their knowledge and guidance helped me through the research and writing of this thesis. Thank you for believing in me. I am also thankful to my previous supervisor, Dr Gregory James, who believed in me from the very beginning of the research and encouraged me to believe in myself.

My profound gratitude goes to my immediate family; to Mum, – who has been caring, and supportive throughout this programme. Special thanks to my dad, my husband – Sope and my siblings: Yemi, Kunbi and Debo, for trusting and supporting me throughout my many years of education. I am immensely grateful. I could not have gone far without your support and encouragement.

Thanks to my friends: WendyAnn, Angela, Freddy, Victor, Akin Sharimakin and most importantly my church family for their immense support and for taking care of my children – Semire and Feranmi. I am deeply grateful. Above all, I give the Almighty God thanks, who was the ultimate enabler throughout the programme.

# Abstract

This thesis investigates the relationship between conflict, economic growth, state capacity and natural resources in Sub-Saharan Africa. It contributes to the limited research in this area and empirically examines these relationships using different econometric models. The first empirical chapter uses a panel dataset that covers the period 1997 - 2013 to analyse the effects of economic growth on conflict in Nigeria using the negative binomial model. The findings support the direct relationship between economic growth and conflict in Nigeria. Controlling for other factors, the results indicate that increase in growth rate - measured by annual growth rate of GDP per capita - decreases the expected number of conflicts.

The study finds no evidence of a relationship between levels of wealth in a state and the incidence of conflicts. The analysis controls for factors such as spill-over effects from other states and year and state effects. Finally, to address potential concerns that economic growth could be a cause of conflict or that other unobserved factors could confound the relationship between economic growth and conflict, the chapter employs instrumental variable (IV) estimation using percentage change in rainfall as an instrument. The results with the IV estimation are similar to the results without IV in terms of both sign and significance, indicating that the negative effect of economic growth on conflicts is not due to reverse causality or omitted variables. For robustness checks, a Panel Autoregressive model (PVAR) is also employed.

The second empirical chapter analyses the effect of conflict on state capacity in Sub-Saharan Africa. State capacity is measured in terms of fiscal and legal capacity. It also looks at the effects of internal and external conflicts on state capacity. The chapter adopts the Ordinary least squared (OLS) and the system generalised methods of moments (GMM) estimation methods to analyse the panel data consisting of 49 Sub-Saharan countries over the period 2000

- 2015. The results suggest that conflicts have a negative and significant effect on state capacity. However, when military expenditure is used as a proxy for state capacity it is found that conflict strengthens state capacity. The results are consistent with theoretical argument that internal conflicts polarise societies and make it more difficult for governments to reach a consensus in investing in state capacity, while external conflicts mobilise domestic population against a common enemy thereby helping in state capacity building.

Finally, the third empirical chapter examines the effect of natural resources on conflict onset and duration using discrete choice models with a dataset covering the period 1980 -2016. The results on the duration analysis show that natural resources prolong duration of conflicts. However, it is found that not all natural resources prolong duration of conflicts. Oil production does not seem to affect duration, whereas oil reserves and gas production lengthens the duration. The findings from the onset analysis show that both production and reserves of natural resources increase the risk of conflict onset.

# Table of Contents

# List of Tables

# CHAPTER 1

# Introduction

## 1.1 Background

Investigating the economic causes of onset and duration of conflicts[1] has gained increasing attention from academics and policy makers alike in recent years (World Bank, 2016). Conflicts lead not only to human suffering but economic cost.[2] According to Blattman and Miguel (2010), the proportion of countries involved in conflicts increased steadily through the last half of the twentieth century, peaking in the 1990s. Of the regions of the world, Sub-Saharan Africa (SSA) had nearly a third of its countries involved in active conflicts. Studies into conflicts and aspects of economic development in the region are therefore topical. Sambanis (2001) points out in a survey of the literature on the topic that empirical work has demonstrated that there is an association between poverty, slow growth, and an increased likelihood of conflicts and their prevalence. On a wider scale, conflicts can cause trade disruptions, human displacements, refugee flows, and a rise in criminal and terrorist networks among other economic consequences of armed conflicts (Blattman and Miguel, 2010; Cerra and Saxena, 2008; World Bank, 2011).

Conflict has been documented as unfavourable to economic growth and development in the empirical literature. However, the reverse may be the case, leading to complications in the analysis (Butkiewicz and Yanikkaya, 2005; Devitt, 2012; Fearon and Laitin, 2003; Polachek, 2012). Many countries in SSA, including Liberia, Sierra Leone, Côte d'Ivoire, Congo, Uganda, Burundi, Rwanda and Guinea-Bissau have, in recent years, been affected by conflicts (Afolabi,

---

[1] Conflicts in this study is defined as armed conflict that occurs in a country. This includes wars and civil conflicts, with the exclusion of non-violent conflicts. Conflict treated as armed one includes insurgents seeking territorial secession or autonomy, or rebels aiming at control of the central government. It also includes ethnic wars, religiously motivated conflicts, territorial conflicts between groups, and revolutionary conflicts, in which insurgents aim for major social transformation.

[2] It is estimated that armed conflicts have resulted in three times as many deaths as interstate wars since World War II (Fearon and Laitin, 2003).

2009; Fearon and Laitin, 2003). While the number of violent conflicts, particularly, inter-state ones, may be declining in the region, internal conflicts - ranging from guerrilla war to genocidal ones - are still prevalent. These include recent insurgencies in the Western and Eastern SSA countries, such as, Kenya, Mali, Niger, Nigeria, Somalia, Sudan, South Sudan and Mauritania that are causing disruptions to the economies of the nations with ripples felt throughout the region. They have resulted in destruction of lives and property and internal displacement of people, which led to a region-wide refugee crisis and consequently to poverty and disease, proliferation of small arms and weapons, human and drug trafficking, illegal exploitation of natural resources and lawlessness (Afolabi, 2009; Annan, 2014; Collier, 2016; Sambanis, 2001). It is reported that SSA accounted for 29 out of 43 global civil conflicts recorded during the 1980s and the 1990s (Miguel, 2004). In addition, the number of conflicts that broke out on the continent during the 1990s and early 2000s is higher than in anywhere else in the world and in 2011.[3] Consequently, by 2011, the highest concentration of peace operations in the world was in Africa.[4]

## 1.2 Motivation of the Research

This thesis focuses mainly on Sub-Saharan Africa, which, as mentioned in Section 1.1, accounts for most of the conflicts in the world. Although, economic growth has been recorded in SSA in recent years (World Bank Annual Report, 2017), the growth is uneven across the countries with considerable variation throughout the region. Furthermore, a related economic issue is that the region still faces high public debt, poverty and low job creation.

---

[3] Stockholm International Peace Research Institute, Yearbook of World Armaments and Disarmament (Oxford: Oxford University Press, 1999)
[4] Stockholm International Peace Research Institute, Yearbook 2012. Armaments, Disarmament and International Security (Oxford: Oxford University Press, 2012)

There is a vast amount of literature on conflict, its different dimensions, and how it affects the performance of an economy. Fearon and Laitin (2003) argue that conflict hinders growth and the intensity of conflict is crucial to economic growth. Collier and Hoeffler (2002), however, argue that poor economic performance of the countries is among the main causes of conflicts in the region. Humphreys (2005) suggests that conflicts in Africa are generally consistent with the *greed and grievance* theory. The theory argues that development of conflicts can be attributed to greed and grievance of part of the population, but emphasises that countries with natural resources are more susceptible to conflicts, particularly where the resources are easily accessible and lootable. A review of the extant literature suggests that research in this area has been unable to reach a consensus on the relationship between conflict and economic growth. This is primarily what this thesis sets to address by focussing on Sub-Saharan Africa.

Furthermore, Gurr (1970) and Gurr and Duval (1973) posit an inverse relationship between economic growth and conflicts, arguing that periods of short-term declines in economic conditions lead to a rise in development of more conflicts. Olzak (1992) argues that both economic growth and decline can lead to conflicts. He states that, for example, periods of economic growth could also lead to an increase in conflicts; this is the case when fortunes for the disadvantaged increase, as they will come to compete with those just above them. Olzak (1992) also posits that declines in economic conditions could lead to an increase in ethnic violence through the effect of economic scarcity, which will intensify competition between groups. Several other scholars have argued that economic growth may lead to greater instability and conflict (Huntington, 1968; Ake, 1974; Harms and Zink, 2005). Their arguments suggest that economic growth may lead to an increase in violence. This may be as a result of inequality in wealth distribution or an increase in the 'utility distance' between any pair of groups, which may lead to conflict (Esteban and Ray, 1999). Finally, some argue that economic conditions

appear to have no effect on conflicts at all. For example, Horowitz (2001) reports deadly riots and conflicts in countries experiencing good times while there are no conflicts when growth declines. This suggests that the relationship is very much unclear and demands empirical investigation, since it is theoretically evident that there is no exact relationship between economic performance and conflicts. This is the second motivation for this study.

Countries in SSA are endowed with natural resources and access to these natural resources can lead to developments of conflicts.[5] The situation becomes complicated when access to these natural resources becomes the reason for conflict or is used to fuel conflicts. Collier (2001) avers that a substantial number of armed conflicts have a strong link to natural resource exploitation, in which either licit or illicit exploitation helped to trigger, intensify, or sustain conflicts.[6] For example, the rebel groups Revolutionary United Front (RUF) in Sierra Leone and National Union for the Total Independence of Angola (known by its Portuguese acronym UNITA) used revenues derived from diamond mining to fund their rebellions against their respective governments (Collier, 2003). In Pakistan and Bolivia, violent protests broke out over the distribution of water while, in the Middle East, disputes over oil fields in Kuwait, among other issues, led to the first Gulf War (Collier, 2003). This thesis therefore also, as its third motivation, aims to examine the effect of natural resources on the onset and duration of conflict in SSA.

---

[5] Natural resources in the region include; oil, gas, diamonds, iron ore, copper, natural gas, gold, platinum and land mass amongst other precious metals.
[6] Illicit exploitation here is illegal exploitation of natural resources while licit is lawful or legal extraction of these resources.

## 1.3 Research Questions

This thesis consists of six chapters, three of which are empirical, and which quantitatively examine the relationship between conflict, economic growth, state capacity and natural resources using country-specific and cross-country data. To achieve the objectives of this study, the empirical investigations are centred on the following questions in a bid to offer some insights into the area.

*Does economic growth have a statistically significant effect on the number of conflicts at the state level in Nigeria?* This is answered by the first empirical chapter, Chapter 3.

*Does conflict affect the state capacity of Sub-Saharan African countries?* This question is addressed in Chapter 4. The chapter further explores the question:
*Which type of conflict (internal or external) has a higher impact on state capacity in Sub-Saharan Africa?*

*Do natural resources cause the onset of conflict in Sub-Saharan Africa? Does the type of natural resource matter in starting or prolonging a conflict in the region?*
These are questions that are dealt with in Chapter 5.

## 1.4 Main Contribution of the Thesis

This thesis contributes to the conflict literature as well as the literature on the relationship between conflicts and economic growth. Despite the increase in economic growth in the last few years, SSA is still experiencing a significant number of conflicts.[7] The main contributions of the thesis lie in its empirical findings found in Chapters 3, 4 and 5.

The first empirical chapter, Chapter 3, examines Nigeria's economic growth performance and its impact on conflicts in the country for the period 1997 - 2013. For better insight, this research analyses this relationship using state level data. Nigeria is the largest economy and the most populous country in the region. The results from the analysis show that economic growth at the state level has a negative impact on conflict in the country. The results are robust across a range of specifications such as temporal lags and state and year fixed effects. The analysis also contributes to the literature by estimating the model using instrumental variables (IV) and Panel Vector Autoregressive Models (PVAR) to account for the possibility that growth may be endogenous. The effect of growth on conflict continues to be negative and statistically significant.  Specifically, the PVAR estimations reveal that there is time effect on the impact of growth on conflict.

The second empirical chapter, Chapter 4, contributes to the literature by examining how internal and external conflicts affect state capacity in SSA.[8] The existing literature suggests that these two types of conflicts may have opposing effects in the development of state capacity. The proposition is that internal conflicts deteriorate state capacity while external conflicts have a contrasting effect on state capacity measured as military expenditure. This could be as a result of the government seeking to strengthen its military base to fight international wars.  For

---

[7] The region recorded an increase from 1.36% in 2016 to 2.6% in 2017. It is projected that the growth could increase to 3.2% by the end of 2018 (World Bank, Economic Global Prospects).

[8] Conflicts are categorised as internal if all conflicts occurred within the country during the sample period while external conflicts are conflicts that involve two or more independent countries.

example, based on cross-country analysis, Besley and Persson (2009) provide empirical evidence that supports this view. They show that the incidence of external wars is associated with stronger states, while the incidence of internal wars is associated with the opposite effects. Using panel data analysis and dynamic panel GMM estimation techniques, this chapter looks into the main determinants of these conflicts and their effects on state capacity for a sample of SSA countries. Specifically, the chapter constructs and uses an index that measures state capacity.[9]

Finally, countries rich in natural resources appear to be engaged in armed civil conflict more often than resource-poor countries (Lujala, 2010). Although there is ample evidence that this may be the case, there is less agreement on why resource-rich countries descend into conflicts. Two main lines of explanation have emerged: first, natural resources, especially those that are easily exploited, provide motivation and means for rebel uprisings. Greedy rebels may use conflict to satisfy their material aspirations (Collier and Hoeffler, 1998, 2004). The other line of explanation sees a causal link through the state; abundant natural resources lead to poor policy choices and a weak state, exposing the society to violent conflict. The second part of Chapter 5 examines the impact of natural resources in prolonging conflict or increasing the risk of conflict by considering both renewable and non-renewable natural resources such as land area, agricultural land, oil, gas, hydrocarbon and rents from resources. Examining both renewable and non-renewable resources offers an explicit interpretation of the effects of natural resources on conflict in SSA.

---

[9] State capacity is measured in two ways – fiscal capacity and legal capacity. Fiscal capacity is proxy using tax revenue and military expenditure while legal capacity is proxy using rule of law, regulatory quality and government effectiveness. A fiscal and legal capacity index is created using equal weights for the variables.

## 1.5 Outline of the Thesis

The rest of the thesis is structured as follows. Chapter 2 provides a general literature review of the theoretical and empirical works on the relationship between conflicts, economic growth and state capacity. The literature review surveys the existing literature on effect of conflict on economic growth and vice versa. In addition, a literature review on state capacity and conflict is provided given the different schools of thought on the topic. The chapter also incorporates different methodological approaches to estimate the impact of economic growth on state capacity and conflict. Chapter 3 examines the effect of economic growth on conflict in Nigeria using state level data. This chapter considers the relationship between growth and conflict in 36 states of Nigeria and the Federal Capital Territory of the country. This study uses a panel data approach that incorporates state and year fixed effects.

Chapter 4 assesses the effects of conflict on state capacity, where both effects of internal and external conflicts are analysed. The chapter considers the issue by categorising the countries into weak and strong as suggested in the literature. Chapter 5 discusses the conceptual issues related to natural resources and conflict onset and duration. It then addresses the relationship using discrete choice models (logit estimation) and Weibull distribution for conflict duration analysis.

Finally, Chapter 6 concludes the thesis. It summarises the findings from the three empirical chapters and revisits the research questions the thesis is set to address. It also highlights the contributions and limitations of the research and offers suggestions for future work.

# CHAPTER 2

# Literature Review - Conflict, Economic Growth and State Capacity: Theory and Evidence

## 2.1 Introduction

Research on conflict has been approached in various ways and with different definitions. There is apparently no universally accepted definition of the term conflict. The first apparent difficulty is whether it is a situation or a variety of behaviour (Rahim, 2010) or an intrinsic and inevitable part of the existence of human beings (Francis, 2006). Nevertheless, there are attempts to define conflict. For example, Wallensteen (2007) defines conflict as a social situation in which a minimum of two actors (parties) strive to acquire scarce resources at the same time. Wright (1990) states that the word *conflict* is derived from the Latin word meaning 'to strike together'. Laue (1990) argues that conflict may arise when wants, needs and beliefs between two or more parties struggle to agree.

Chung and Megginson (1981), Carrell et al. (1997), and Dubrin (2005) contend that conflict happens whenever disagreements exist in a social situation over issues of substance or whenever emotional antagonisms create frictions between individuals or groups. They agree that conflict persists when both sides refuse to come to an agreement and when connecting with the other party is impossible. Consequently, the dominant view is that conflicts are largely the expression of mutually opposing interests between individuals and/or groups in a society. Therefore, there is the need to conceptualise conflict along a continuum that ranges from interpersonal and dormant conflicts at one end to violent and disruptive conflicts among groups at the other. The continuum helps us to grade conflicts based on its intensity (non-violent or violent, less severe and protracted or severe and protracted). This allows conflict to be treated as either non-violent or violent.

The majority of the conflict sub-section falls under violent conflict, while riots/protest can either be violent or non-violent. Violent conflict can lead to major destruction in the economy, which in turn causes slow economic growth. From the view point of civil conflicts, three major theories or approaches are proposed in the literature. However, it needs to be stressed that although they offer some useful insights into the causes and nature of civil unrest, none of them is exhaustive on the nature and dimensions of the phenomenon. These are theories that:

(i) place emphasis on the failure of the social contract as the principal driver of conflict;

(ii) highlight private incentives, and consider conflict as motivated by private interests in hopes of exploiting the gains arising from it; and

(iii) highlight group stimuli, which underscore conflict as driven primarily by disparities in social and political resource distribution between and among groups with common affinity in religion, ethnicity or other bonds.

For the purposes of this study, conflict that has been categorised as violent conflict and includes civil and international wars, ethnic and religious fights and violent riots.


## 2.2 Economic Growth and Conflict

Economic theory is ambiguous about the relationship between conflict and economic growth. On one hand, conflicts disrupt capital and manpower which decreases growth in the economy. On the other hand, conflicts mobilise the work force, increasing effort and enhancing productivity (Polachek and Sevastianova, 2010). A country experiencing little or no growth might experience high levels of conflict due to its members fighting for a better standard of living, among many other reasons. Alternatively, the depletion of resources during wars may be one reason why some countries fail to sustain adequate economic growth, because economic growth affects a population's well-being. This question concerning how war relates to growth

is important from a policy perspective, though it is plagued with endogeneity problems from the empirical point of view.

The most widely-accepted relationship between economic growth and conflict posits that high-income countries are less likely to experience civil wars than low-income countries. Findings are almost entirely consistent in direction – growth, prosperity and development reduce the risk of civil war (Dixon, 2009). According to Collier and Hoeffler (2004), a life in poverty makes people more frustrated and thus more likely to rebel. Poverty also increases the available recruits - rebels - because of high amounts of unemployed and dissatisfied youth. The number of rebels should decline as the economic opportunity costs of rebellion increases. In richer states, time devoted to production, rather than rebellion and appropriation, pays more than in poor states (Sambanis, 2003).

Fearon and Laitin (2003) also find that higher income per capita reduces the likelihood of conflict. However, their argument is that income per capita is a general proxy for a country`s financial, administrative and security capacity. If the regime is weak, rebels have higher chances of success. They further establish that it also captures the quality of infrastructure and central administrative penetration into rural societies where grievance and separatist sentiment may arise. However, Buhaug and Rød (2006) find only a marginally significant effect on territorial (separatist) conflict.

## 2.2.1 Empirical Literature on Economic Growth and Conflict

Economic growth may affect conflict through several channels. Collier and Hoeffler (1998, 2001 and 2002), in their studies, find that young men are more likely to take up arms when income opportunities are worse for them in agriculture or in the formal labour market, relative to their expected income as a fighter. The authors argue that conflicts are fundamentally driven

by such economic opportunities rather than by political grievances —for example, repression against particular social groups. They find that slow income growth, low per capita income, natural resource dependence (proxied by primary commodity exports), lower male enrolment in secondary education, rebel military advantages (proxied by dispersed population), and total population are all significantly positively associated with the onset of civil conflict. They also find that democracy does not reduce the probability of the onset of conflict, which they take as further support for the view that civil conflicts are not driven by political grievances.

Fearon and Laitin (2003) find that lower GDP per capita is significantly associated with the onset of a civil war; they argue that the key channel linking poverty and civil war is a low repressive capability resulting from weak militaries and poor roads. Using novel geographic data, they also emphasise the role of rough terrain—captured by the percentage of the country that is mountainous—in sustaining insurgencies. The authors also found that ethnic diversity does not contribute to the onset of conflict. Miguel et al. (2004) suggest that GDP growth is significantly negatively-related to the incidence of civil conflict in SSA during the period 1981 - 1999 across a range of regression specifications, including some with country fixed effects. They found that the relationship between GDP growth and the incidence of civil conflicts is extremely strong; a five-percentage-point drop in annual economic growth increases the likelihood of a civil conflict (at least 25 deaths per year) in the following year by over 12 percentage points. This amounts to an increase of more than one-half in the likelihood of civil conflict. However, they found that the impact of income shocks on civil conflict is not significantly different in richer, more democratic and more ethnic diverse African countries or countries with a range of different political institutional characteristics.

## 2.3 State Capacity and Conflicts

Typically, state capacity is linked to the Theory of Political Opportunity Model presented by Tilly (1978). This model uses state capacity as the main explanatory factor, in which a state can either repress or accommodate a rebellion. If rebels know that the state is capable to repress a planned rebellion, they are less likely to be rebellious.[10] If the state has the capacity to accommodate different interests and grievances through institutionalised channels like party systems, the motivation for conflict and rebellion will be lessened (Tilly, 1978). If a state chooses to repress a rebellion, the state must have the capacity to identify the rebels and determine the form of coercion to apply. Despite its pedigree and the various interpretations in the social sciences literature, state capacity is a relatively lesser-known concept in the economics literature in part because it is complex to define and measure.

According to Hendrix (2010), state capacity can be categorised into three broad dimensions: first, military capacity; second, administrative capacity; and third, quality and coherence of political institutions. *Military capacity* is typically the state's capability to repress rebellions and is often measured as military personnel per capita or military spending per capita (Hendrix, 2010). *Administrative capacity* can be measured in multiple ways: the quality of the service provided by the state during a government change; the ability to commit to private investors; or the state's ability to collect revenue from the society, monitor the population, identify and find potential rebels together with collecting information (Hendrix, 2010). *Quality of political institutions* defines state capacity as the degree to which democratic and non-democratic features are intermingled in the political system. In the extant literature, the most common measure used to capture institutional coherence is the Polity Index (Gurr, 1974; Hegre, et al., 2001; Marshall and Jaggers, 2009).

---

[10] Rebels here referred to as armed groups who either want to take over the government or an existing territory.

Besley and Persson (2010) define state capacity as a state's ability to effectively implement policies, which is similar to the definition of economic and legitimate capacity. One of the other dimensions to a state capacity is the ability to create policies and enact these policies – extractive and legitimate capacity. If a state lacks funding, it can be challenging to provide the population with their basic needs and demands. Administration of the state becomes difficult when resources are scarce and arguably it becomes a vicious circle when revenue from tax, resource rents, grants and foreign aid plummets as a consequence of bad management. A recent interest in the economic literature is the distinction between legal and fiscal state capacity. Legal capacity refers to issues such as the availability of contracting institutions (i.e., institutions supporting private contracts) and property rights institutions (i.e., institutions constraining government expropriation). Cardenas et al. (2010) propose fiscal state capacity as the capacity which deals with questions such as the ability to raise revenue from the society - usually measured by the total taxes as a share of GDP.

The extant literature has also examined different dimensions of state capacity, including military, administrative/bureaucratic, political, institutional, and economic capacity (De Rouen and Sobek, 2004; De Soysa and Fjelde, 2010; Englehart, 2009; Fearon and Laitin, 2003; Fjelde and De Soysa, 2009; Henderson and Singer, 2000; Suzuki and Krause, 2005; Taydas, et al., 2010; and Thies, 2010). One common feature of the existing conceptualisation of state capacity is the importance of the coercive (and to some extent the administrative) capacity of the state, which reflects the ability of the state to deter violent challenges to its authority (Collier and Hoeffler, 1998; Fearon and Laitin, 2003; Henderson and Singer, 2000). Against this background, state strength is associated with the degree to which the state can exert power over its citizens.

## 2.3.1 Types of State Capacity

### 2.3.1.1 Weak and Strong State Capacity

Due to the lack of consensus in evaluating state capacity in each of its core area of responsibility has required the need for scholars to refer to weak states by using a host of adjectives such as 'failed', 'fragile', 'failing' and even 'collapsed'. This is used to differentiate between countries suffering from a wide variety of capacity gaps. Although there is no universally accepted definition of weak states, the general agreement is that such countries that lack the capacity and/or will to perform core functions of state effectively are weak. These states or countries do not have sufficient bureaucratic penetration into society and efficient institutions of coercion like police and military forces. They are expected to face numerous difficulties in enforcing laws, imposing order, and maintaining peace among the citizens. They also experience numerous challenges in monitoring, discouraging, and suppressing opposition, which create conditions that are conducive for insurgents to recruit non-combatants to their forces. The legitimacy of a regime is dependent on its performance; if the state is able to produce and deliver economic and social goods at the level its subjects expect, or at least as its rulers promise, it should have no legitimacy problem. However, if the state cannot adequately steer the economic system, this is likely to result in a decline in its legitimacy. With legitimate capacity, the state can effectively steer activities without the necessity of constantly deploying coercion. Without legitimacy, the state would find it much more difficult to extract resources from the society and would have to bear much higher costs in maintaining law and order (Habermas, 1976).

Hironaka (2005) defines state weakness as an ineffective bureaucratic and political system. The issue with this definition is that it merely reiterates the definition of a state in a slightly different language rather than identifying actual underlying antecedents: what, in this context, is the state other than a bureaucratic and political system? What constitutes military

and police capabilities or reach of government institutions and in what sense are these things weak? Kocher (2010) attempts to answer these questions and points to at least five distinct understandings of the strong/weak state dimension, several of which have sub-types. There is no reason to presume that the list is exhaustive of all possible accounts that refer to the characteristics of the state, but it is a plausible list.

First, strong states have been identified with centralisation, which can be either territorial or administrative. Territorially decentralised states have assets that are separated from state cores either by water or by the territory of other states; strong states are territorially unified. In decentralised states, these units may raise independent taxes, directly elect executive or legislative bodies, or carry out independent public policies in few or many domains. Both federal states and states with systems of indirect rule may be considered decentralised.

Second, state strength has been theorised as wealth (Kennedy, 1987), "latent power" (Mearsheimer, 2001), or high fiscal capacity (Skocpol, 1985), the last of which may include the ability to tax or to borrow. The rationale is straightforward: accomplishing policy goals of almost any kind requires resources. States that are better able to acquire resources, either because more resources are available or because they are better at tapping them, generally will be more successful at achieving their policy goals. This measurement of "strength" leads directly to a general class of theories that ascribe political instability or violence to exogenous income shocks caused by war, population pressure, changes in rainfall or fiscal dependence on volatile natural resource income (Humphreys, 2005).

Third, strength is related to a professional and autonomous bureaucracy, including military officer forces. Professionalisation is rooted in the methods of credentialing and selection (school degrees and competitive examinations, for example) and the philosophy of the bureaucrat. Autonomous officials are salaried and they cannot appropriate their offices and attached assets as personal property or pass them down to heirs. Weak or failing states have

been identified by some contemporary scholars with neo-patrimonialism,[11] or the systematic privatisation and exploitation of public positions and resources (Reno, 1998). Such states are termed predacious in the sense that they extract resources from society without providing corresponding public benefits. A related deviation from bureaucratic rationalism involves systematically directing state resources and offices toward real or fictive clans. In effect, states without a professionalised bureaucracy lack autonomy and neutrality with respect to social groups. The state becomes an object of competition rather than an agent in the service of society.

Fourth, strength may be theorised as a relative lack of institutional restraint on the regime. A political system in which many actors have an effective veto over policy implementation may find it hard to get anything accomplished. Autocrats, in particular, face fewer checks on their executive discretion than elected officials. Consequently, they are free to resort to a range of policy options (including repression) that their democratic counterparts do not have available to the same degree. This conception of "strength" has declined along with the fortunes of authoritarian states during the so-called "Third Wave" of democratisation. However, it is often revived in popular and journalistic discourse when discussing, for example, the governing agility of the Chinese leadership or Vladimir Putin's revitalisation of the Russian polity. A number of empirical studies of conflict have identified an inverse U-shaped relationship between regime type and civil war, indicating that the most authoritarian states are fairly resistant to the outbreak of civil wars (Vreeland, 2008).

Fifth, international relations sometimes define strong state capacity in terms of the quantity and quality of military assets or "capabilities": soldiers, tanks, naval vessels, and

---

[11] Neo-patrimonialism is the vertical distribution of resources that gave rise to patron-client networks based around a powerful individual or party. Once argued to be necessary for unification and development after decolonisation, these regimes have supplanted the role of the inherited colonial institutions for the benefit of a few individuals. It is significant nowadays because it affects almost all Sub-Saharan states to differing degrees and is not regarded as corrupt behavior by the population, who rely on the system for their own survival.

munitions (Kocher, 2010). This view of strength is highly intuitive; big, expensive armies win wars and deter would-be aggressors. The logic of the argument can be extended to encompass non-military security forces such as police. Domestic groups that might otherwise see opportunities to capture the state or detach territories from it are likely to be deterred or defeated quickly before large-scale challenges can develop. Strong states are also referred to as high capacity states that are able to provide public goods such as human security, medical and health care, and the social and physical infrastructure that promote human development (Rotberg, 2003). Weak states, also known as low capacity states, are limited in their ability to provide these goods, leading to low social trust (Rothstein and Stolle, 2008), low development levels or even state failure (Rotberg, 2004; Skocpol, 1979). Strong states are also known to possess high levels of socio-political cohesion that are directly correlated with consolidated participatory democracies, strong national identities, and productive and highly developed economies.

The political domain in Sub-Saharan African countries have been viewed as a big-man rule regime. Big-man rule conventionally describes the relationships between patron and client in a patrimonial system, with an emphasis on the personal – sometimes almost transcendent – power of the patron and the distance between leader and subject. Notorious leaders like Mobutu Sese Seko, Félix Houphouët-Boigny, and Daniel Arap Moi are frequently cited as examples, but the concept of the big-man applies equally well to contemporary leaders.[12] The essence of the patron–client relationship is that patrons provide material resources, services, and opportunities – to which they as big-men have access but others do not – to their followers in exchange for loyal support and allegiance (McCauley, 2012). The relationship ensures that subjects have their welfare needs met directly, and that big men enjoy the authority and

---

[12] For example, David Booth and Frederick Golooba-Mutebi (2012) characterize the current Rwandan regime as a patrimonial, big man state.

legitimacy necessary to maintain power. Some scholars suggest this relationship could be traced to precolonial norms that encouraged elites with uncertain time horizons to capitalise on their positions of influence.[13] Others highlight the importance of exogenously-imposed colonial borders that, when coupled with extractive institutions, resulted in states not representative of nations, but rather of varied and often competing sub-national units. The solution was a kind of 'nationalist bargain', whereby new leaders made great promises of support and welfare to their constituents, in exchange for loyalty to the state, personified by the leader himself (Acemoglu et al., 2001).

Conflict and political instability are often common features in developing countries as weak government institutions experience stagnation and hopelessness (Besley and Persson, 2010). One of the consequences of the colonial period experienced by African countries was that the colonial powers hired mostly Europeans to run the colonies and their regime was very bureaucratic (Van de Walle, 2001). When independence came to African countries between the late 1950s and the 1980s, few natives had any experience or training in running a state or even a university degree. This changed drastically through the next decades, but still scholars claim that state capacity has actually deteriorated since the independence of African countries, leading to development of weak states in the continent (Van de Walle, 2001). Corruption, lack of research and technology innovations, low morale and legitimacy problems, along with shortages of (and outdated) equipment and technology are also part of the picture. Brain drain and better paid jobs in the private sector leave the public sector without enough qualified candidates, and normal government tasks like tax collection and statistical service barely function. Essential services like communications, electricity, education and transportation systems are neglected as a result of the state being weak and incapable to perform these functions. This, however, is not the current state in most African countries; there are varying

---

[13] See Jean-Francois Bayart, The State in Africa: The politics of the belly (Longman, London, 1993).

degrees of weakness in state capacity. In addition, weak states usually experience all the symptoms of economic underdevelopment: dualistic and poorly integrated mono-economies, heavy debt burdens, low or negative growth rates, high inflation and unemployment, low levels of investment, and massive social inequalities. However, weak states are not excluded from periods of economic growth such as were enjoyed by Botswana, Uganda, Nigeria and South Africa in the 1990s and early 2000. However, by comparison with the developed states in Western Europe or North America, they lag significantly behind in economic growth. The question then arises of what constitutes a strong state and a weak state in the context of SSA countries.

Rice and Patrick (2008) developed an index of state weakness in developing countries. The authors define weak states as countries that lack the essential capacity and/or will to fulfil the four sets of critical government responsibilities. Which are: fostering an environment conducive to sustainable and equitable economic growth; establishing and maintaining legitimate, transparent and transparent political institutions; securing their populations from violent conflict and controlling their territory; and meeting the basic human needs of their population. About 141 developing countries in the sample were ranked according to their relative performance in four critical spheres: *economic, political, security* and *social welfare*. State weakness is therefore measured as a state's effectiveness in delivering on these four critical dimensions.

The state weakness index is based on 20 indicators to show a balanced picture of how each country performs or fails to perform along multiple dimensions.[14] Each indicator score is standardised and aggregated, creating an individual score which is then averaged over the four main categories to obtain an overall score for state weakness ranging from 0.0 (failed state) to

---

[14] The indicators are listed in Table B.2 in Appendix B.

10.0 (strong state). The 20 indicators provide a multifaceted yet user-friendly measure of each state's performance profile. The individual indicator scores also allow useful comparisons between states on each dimension of state performance. Their results show that failed and critically weak states are geographically concentrated in SSA. Though only one-third of the 141 countries examined were in SSA, 23 out of the 28 critically weak states are in the region. There are, of course, high performers in the region, including Botswana, Mauritius, Seychelles and South Africa.

The index provides policymakers with tools to examine and better understand the unique dynamics and drivers of performance in each country and, in principle, to tailor and target their policy interventions. Appendix B provides each country's index and the scores obtained in the four basket categories. It has also been colour-coded based on each county's relative weakness. Such an index may be viewed as an approximation of each country's weakness relative to other developing countries. In line with this measurement of state weakness, this study assumes that all states in the region are weak and do not differentiate between weak or strong states in SSA. The data sample and empirical analysis in this chapter make no differentiation between each state's relative weaknesses, categorising them as critically weak, as a failed state, as a weak or as a top performer in the state weakness index.[15]

According to Jackson (2002), states are dynamic in nature and a weak state now may become a strong state in later years or vice-versa; some states lie somewhere between strong and weak, having some of the characteristics of a strong state — for example, effective institutions and a strong economy — but lacking others, such as an enduring sense of national identity, or legitimacy. Botswana, for example, possesses some characteristics of a strong state: relatively effective state institutions, a growing economy, and participatory politics, but weak

---

[15] Rice and Patrick, (2008) developed an index of state weakness for 141 developing countries.

in providing sound social welfare to its citizens. The country is clearly further along the scale towards state strength than is Sierra Leone, which lacks any of these characteristics. Many other researchers have considered African countries as weak states (Cottingham, 1974; Jackson and Rosberg, 1982; Cruise O'Brien, 1991). A possible extension to this study is to classify weak and strong states in Africa by developing a new index, following on from the Brookings index with new and updated data so as to establish any differences in country performance. Another possible extension is to empirically examine the different categories of weakness and how these influence state capacity, this is, however, beyond the scope of this study.

## 2.3.2 State Capacity and Conflicts

The onset of conflict implies not only that there is substantial motivation for organised rebellion, but that there is also adequate opportunity for it (Collier and Hoeffler, 2004; Hegre and Sambanis, 2006). In other words, conflict onset indicates that the state lacks the capacity to effectively deter, or otherwise prevent, a violent challenge to its monopoly over the use of force. Fearon and Laitin (2003) attribute armed rebellion to a set of structural conditions that reduce the opportunity costs of insurgency, thereby increasing its likelihood. They find that mountainous terrain and low economic development, proxied by GDP per capita, significantly increase the probability of conflicts. While rough terrain poses a challenge to the capability of state forces to find and defeat insurgents, GDP per capita is treated as a direct indicator of the financial and administrative resources that can be effectively mobilised for counter insurgency (Fearon and Laitin, 2003). Although a robust predictor of conflict, GDP per capita as a catch-all measure fails to capture the multidimensional theoretical conceptions of state capacity. Hence, others have sought to refine the definitions for and measures of its underlying components (Hendrix, 2010).

Boulding (1989) posits a useful framework for considering and organising conflict and state capacity by identifying three distinct dimensions of state power: *threat*, *economic*, and *integrative*, or 'the stick, the carrot, and the hug' respectively. *Threat power* characterises a state's capacity to deter potential rebels via the credible threat of forceful retaliation. Military strength, the competencies and reach of the police, and intelligence forces are particularly important here (Herbst, 2004). Collier and Hoeffler (1998) similarly argue that economically developed states - which have the resources necessary to fight rebellion - are more capable of snuffing out and deterring insurgency, using the relative political capacity (RPC) measure as an indicator of the state's administrative reach.

Fjelde and de Soysa (2009) investigated the relationship between conflict and state capacity by suggesting three conceptually and empirical notions of state capacity. These notions signify different ways in which peace can be secured, which are - coercion, co-optation and cooperation. Coercion is proxied as the ability to extract large taxes, co-optation as the relative size of government spending or level of public goods provision, and cooperation as the degree of trust economic agents have in state institutions. They find that public spending is significant in enabling strong environments and that good institutions contribute to peaceful periods in a society. Their results suggest that it is beneficial to look at peace as co-produced and not just originating from coercive ability of the states. They also found that good governance can be obtained by states that are able to elicit cooperation by credibly committing to providing collective goods and securing property rights and the private market. Also, states that pay back a larger share of the productive assets of society in the form of state spending seem to manage peace much better than those that simply have more coercive capacity for collecting a super-normal amount of taxes.

Beyond forcing compliance by threat of violence, the state may also buy the loyalty of those who would otherwise find it in their best interest to challenge state power via strategic redistribution of goods and resources in exchange for submission (Boulding, 1989; Bueno de Mesquita et al., 2003). The *economic power* resides in the financial capacity of the state to confront potential rebel threats with cash and services, and has been found to effectively do so (Fjelde and de Soysa, 2009). For example, redistribution in the form of unemployment benefits (MacCulloch, 2004) or spending on education (Thyne, 2006) can reduce the public's preference for, and the actual risk of, violence against the state. In short, greater economic capacity allows the state to both alleviate the grievances of the impoverished (Buhaug, 2006) and still maintain the flow of special benefits to its primary base of support necessary to retain power.

Boulding's (1989) third dimension of state capacity, *integrative power*, is interpreted by Fjelde and de Soysa (2009) as 'the ability to develop legitimacy and invoke relations of loyalty and trust to secure cooperation of societal actors and groups'. Using contract intensive money (CIM) as a proxy, they find that it, too, serves to significantly reduce the probability of civil war. Similarly, research finds democracy and political stability – which promote cooperation and trust – associate negatively with conflict (Hegre et al., 2001; Reynal-Querol, 2002), in contrast to political instability, which can provide fertile ground for rebellion (DiGiuseppe et al., 2012). Institutions that provide for greater economic freedom, and that make a government's commitment to uphold property rights more credible, may have a predominant role in ensuring societal trust and peaceful development (Fjelde and de Soysa, 2010; North and Weingast, 1989).

Thyne (2006) examined conflict onset in relation to public goods (education) provided by the government. Investment in public services is one way the government can signal that it cares about the population. This can be achieved through a variety of ways, such as increased

spending for water sanitation, securing basic health needs, or providing a strong system of education. According to Thyne (2006), educational investment can reduce grievances in its ability to create economic development and social equality. A number of research articles support the claim that education leads to economic growth (Adeola 1996; Granato et al., 1996). In addition to creating economic growth, recent studies have found that education leads to more equitable economic growth than other sources of income, such as natural resource development (Birdsall, 1998; Hojman, 1996; Londono, 1996; Reynolds, 1996; Saint-Paul and Verdier, 1993).

Taydas and Peksen (2012) also argue that higher levels of social welfare spending by the government will reduce the likelihood of civil conflict onset. It is believed that it takes a conscious effort from the government to maintain a state of peace and this can have an impact on public finances. The state's effort to increase spending might influence conflict onset in a number of ways but two in particular may be crucial. First, the government's commitment to redistribute income has an important effect on the perception and preferences of social actors towards the state. In return for productive social welfare policies, political leaders gain public loyalty, compliance, and support; they also have an easier time pursuing their agendas. This strategy - namely government commitment to redistributing in favour of the poor - was used by rulers in the west in the 19th century to increase the legitimacy of governments and to prevent revolution (Acemoglu and Robinson, 2000).

The second and more indirect connection stresses the role of social spending in promoting economic development, decreasing the impact of poverty, and undermining the opportunity structure for rebellion. The authors found that welfare spending is a significant indicator of conflict onset. Increase in social welfare reduces the incidence of conflict in the

sample examined.[16] The analysis was extended to include public spending and military expenditure. Previous research on public expenditure suggests that generally government expenditure could have a peace-inducing impact and that higher levels of government spending decrease the risk of civil conflicts (Acemoglu, 2005; Fjelde and de Soysa, 2009). This belief originates from the fact that total government consumption is the broadest measure of government intervention and contributes to economic development. Burgoon (2006) suggests that although some public expenditure does not serve redistributive or welfare goals (e.g. defence spending), they still affect the social rights of citizens, particularly in developing countries where clearly social welfare is not developed. He finds no statistically significant relationship between military expenditure and the emergence of internal conflicts, but that the welfare spending remained statistically significant.

Likewise, Thies (2010) examines the relationship between state capacity and civil conflict onset from the primary commodities view point. The focus of the article shifts from typical civil conflict literature - where the incentives of rebel and rulers are revenue seeking in nature - to examine if primary commodities solely affect state capacity or indirectly impact on state capacity via conflict onset. Since primary commodities are lootable and taxable, both rulers and rebels are likely to be drawn to them as sources of revenue. Rather than assume the state is a function of per capita income that serves to constrain rebels, state capacity is modelled as a function of its fiscal size and strength. A two-equation model is developed to capture the simultaneity of civil war and state capacity. The results show that all measures of state capacity are not significantly related to civil conflict. He finds, however, that civil conflict disrupts the normal pattern of revenue extraction even when the extraction includes non-tax revenue.

Dincecco and Katz (2012) analyse the relationship between state capacity and long-run economic performance for 11 European countries over 4 centuries. The argument for using

---

[16] Their sample consists of 153 countries for the period 1975-2005.

only European countries lies in Europe being deemed as the birth place of modern economic growth. They argue that sovereign governments in European history typically faced two key political problems: fiscal fragmentation and absolutism. Although the rulers had weak authority over taxation, they had strong control over expenditures. Under this equilibrium, revenues were low, and executives typically spent available funds on military explorations rather than on public services with broad economic benefits. Dincecco and Katz (2012) claim that the implementation of uniform tax systems at the national level – "fiscal centralisation" – enabled European states to effectively fulfil their extractive role. This revolution naturally occurred swiftly and permanently from 1789 onward.

Similarly, it is argued that the establishment of parliaments that could monitor public expenditures at regular intervals – called "limited government" – enabled them to effectively fulfil their productive role. This typically occurred decades after fiscal centralisation over the nineteenth century. By the mid-1800s, most European states had achieved modern levels of extractive and productive capabilities, implying that they could gather large tax revenues and effectively channel funds toward non-military public services. These critical improvements in state capacity are believed to have strong positive performance effects. Their results show that the state performance is largely dependent on extractive and productive capabilities. The results are also robust to a range of specifications, controls and sub-samples. This, therefore, suggests that, a key element in building state capacity is by the extractive and productive capabilities of the government.

Centeno (1997 and 2002) and López-Alves (2000) explore the role of wars in state formation in Latin America. A major insight in their contributions is that external and internal wars are two distinct types of conflict with potentially opposing effects in the development of state capacity. While external wars are moments of unity and consensus that facilitate the decision to invest in state capacity, internal wars are, by definition divisive and destructive.

The implication of this proposition is that external and internal wars have opposite effects on state capacity. Stubbs (1999) claims that war (or the threat of) has been an important factor in moulding state institutions in the most successful economies of East Asia (namely, Japan, South Korea, Hong Kong, Malaysia, Singapore, Taiwan, and Thailand), while Desch (1996) looks into the cases of China, Cuba, Israel, and South Korea to conclude that their threatening external environments have resulted in stronger states.

Cardenas et al. (2010) however, argues that there might be possible reserve causality driving the results of earlier cross-country analysis. They argue that conflicts can be reduced or eliminated by increasing military confrontations - which is achieved though increases in taxation and greater state capacity - and that internal conflicts deteriorate state capacity both at the cross-country and within-country levels, and that intense conflicts have a stronger negative impact. They found no effect of external conflicts on state capacity.

The majority of the conclusions on state capacity and conflict - except for Cardenas et al. (2010) have been reached using cross-sectional data which has limitations.[17] One primary reason why cross-sectional data might be inappropriate is that state capacity can be persistent over time, much like institutional measures. This suggests that present state capacity is highly correlated with past state capacity. Also, past state capacity may have driven the country's decision to engage in previous conflicts, such that a stronger state may be more likely to fight wars with another state or states, while internal groups may be more likely to challenge the state if it is weak (Cardenas, 2010). This, therefore implies that the persistent nature of state capacity cannot be ignored, because it could lead to biased estimates of earlier conflicts; a potential reverse causality issue arises when effects of past state capacity are not acknowledged in the econometric specification.

---

[17] The authors adopt a panel data approach for countries in Latin America.

## 2.4 Conflicts in Sub-Saharan Africa

The problem of violent internal conflict in Africa is severe. It has been judged to be "the most warring region on the planet" (Jackson, 2000; Van Tongeren, 1999). Nearly a third of Africa's conflicts have started since the late 1980s; indeed, Africa is experiencing a much greater rate of increase in the number of conflicts than other regions, except for countries in the Middle East who are facing a long period of civil war (Elbadawi and Sambanis, 2000). Half of Africa's states are in some form of conflict, affecting 20% of the continent's population. In mid-2001, serious internal conflict continued in Western Sahara, Sudan, Chad, Somalia, Sierra Leone, Senegal, Guinea, Liberia, Congo-Brazzaville, Democratic Republic of Congo, Rwanda, Burundi, Uganda, Angola, and the Comoros. Many other African states face political instability, high levels of domestic political violence, or growing secessionist or rebel movements such as Lesotho, South Africa, Namibia, Kenya, Central African Republic, Djibouti, Ghana, Côte d'Ivoire, and Nigeria. Also, the ethnic violence conflict erupted after the 2007 Kenyan presidential election and the many religious and communal conflicts between different ethnic groups in Nigeria. The Eritrea-Ethiopia border war is also causing major distress for the communities who live around the border.

Some researchers of African conflict (Anyang' Nyong'o, 1991; Fearon and Laitin, 2003; Msabaha, 1991; and Obasanjo, 1991) argue that conflict in Africa stems primarily from crises of national governance and from the failure of governmental institutions to mediate conflict. Some others believe the conflicts are as a result of the region's colonial past (Cohen, 1995; Duala-M'Bedy, 1984; Okoyo, 1977). Cohen (1995) asserts that the sources and consequences of Africa's internal conflicts have their roots in colonialism, the subsequent processes of de-colonisation and state formation, and the ensuing crisis of nation building. He also suggested that the de-colonisation process was flawed. In many countries, the contradictions of the colonial state were passed on to the independent states through a defective

process of de-colonisation. He argues that conflicts, recurring instability, and bad governance in Rwanda and Burundi can be traced back to the hasty and unprepared granting of independence by Belgium in 1960.  The major wars in Angola and Mozambique also occurred as a result of panic de-colonisation from a revolutionary and chaotic Portugal in 1974 - 1975.

Extant literature on conflicts in Africa appears to view the conflicts mainly in general terms as ethnic motivated conflicts or intra-national conflicts. This view holds good to some extent, but it is far from being the general trend. However, these two classifications may have stemmed from the views of western knowledge of the composition of African societies. It is important to understand that the conflicts in Africa go beyond these classifications and that there are different roots and causes of conflicts in the region. Arguably, there have been a few inter-state conflicts, some of which include the:

(i)     Nigeria - Cameroon dispute over the Bakassi peninsular since the 1970s.

(ii)    Algeria - Morocco conflict over the Atlas Mountains area in October 1963.

(iii)   Eritrea - Ethiopian crisis between 1962 and 1979.

(iv)    Somalia - Ethiopia dispute of 1964 - 1978 over the Ogaden region which borders both countries.

(v)     Chad - Libya crisis of 1980- 1982

(vi)    Kenya - Somalia border war of 1963 -1967 in which Somalia aimed at recovering its lost territories including the Northern frontier district of Kenya

(vii)   Tanzania - Uganda crisis in 1978 - 1979).

(viii)  Eritrea - Ethiopia border war, 1998 – 2000, 2007 – 2008, 2016 - present)

Internal conflicts or intra-states conflicts, on the other hand, often occur due to a number of reasons. These reasons could range from several underlying factors such as climate, inequality, weak institutions, inadequate political system, religion, ethnicity and natural

resources.[18] These conflicts could be government authorities against an opposition group or between two opposing groups (Eminue, 2004).[19] Over the years, Sub-Saharan Africa has experienced different forms of conflict that could be broadly categorised as internal or external conflicts. However, the region has also experienced a third type of conflict: internationalised internal armed conflict. Such conflicts - which are essentially civil war - have varying degrees of external involvement. Examples include the conflicts in the Democratic Republic of Congo (DRC), Angola and Sierra Leone (Aremu, 2006).

There are several processes by which internal conflicts may be transformed into wider international conflicts. First, they can become a threat to international peace and security when the fighting spills over into neighbouring states or when refugee-flows upset regional stability. Second, external states are often directly or indirectly drawn into the conflict through support links to the various sides of the conflict, supplying weapons, training, or other materials. Third, sub-state actors - such as rebel movements, militias or warlords - often receive financial and political support from diaspora communities or ethnic kinfolks separated by international borders. Lastly, the international community may decide to send in a peacekeeping force, or take such an active interest in the fighting that it becomes a matter of international concern. Rarely can internal conflicts remain isolated from the wider international system, and separating their internal and external aspects is not straightforward when internal actors seek external sponsors and when external actors are constrained by the necessity of using and accommodating to local agents.

The primary challenge posed by Africa's conflicts lies in their internally driven character. As mentioned earlier, inter-state conflicts are also quite common in the region. Fights over border boundaries have resulted in large scale armed conflict. For example, border

---

[18] Some inter-state conflicts arise as a result of arguments over land especially land with natural resources.
[19] Internal conflict may also be seen as one in which armed violence occurs primarily within the borders of a single states (David, 1997).

disputes between Eritrea and Ethiopia - a relatively simple border conflict - have been transformed into a wider regional conflict involving Kenya, Somalia and Libya, and have taken on many of the characteristics of internal conflicts. Africa's internal conflicts pose particular conflict management challenges, not least because they tend to be more intense and intractable than inter-state ones. Empirical studies demonstrate that they tend to be more severe and costly in terms of loss of lives and refugees than inter-state conflicts (Jackson, 1998). For example, since 1960, a full third of Africa's conflicts are mainly internal ones (Jackson, 2000). In the same period, 10 major conflicts alone claimed the lives of between 3.8 and 6.8 million people (Van Tongeren, 1999), and, in total, an estimated 8 million Africans have lost their lives as a direct result of war - 5 and a half million of whom were civilians (DFID, 2000).

With respect to health, Alderman, et al. (2009), in analysing data for Zimbabwe, find that greater exposure to civil war has a negative effect on child height. Bundervoet et al. (2009), focusing on Burundi, find that an additional month of war decreased children's height for age z-scores by 0.05 standard errors compared to non-affected children. Arcand and Wouabe (2009) find that conflict intensity worsened child health during and after the conflict in Angola. There is also micro evidence for the effects of conflict on education. Akresh and de Walque (2008) show that the armed conflict in Rwanda had a negative effect on schooling outcomes, with exposed children completing half a year less. De Walque (2004) discusses how civil conflict in Cambodia had a lasting impact on educational attainment, mostly because of the collapse of the education system. These results indicate that conflict can have profound negative effects on human capital, thereby sustaining poverty and slowing down economic recovery.

**Table 2.1 Notable Sub-Saharan African Conflicts**

| Conflict Name | Dates | Estimated Fatalities | Intervening Parties |
|---|---|---|---|
| Congo conflict | 1960—1965 | 110 000 | UN Force, USA, Soviet Union, Belgium |
| African territories - Portugal | 1961—1975 | 100 000+ | South Africa, Rhodesia, Zambia, Zaire |
| Eritrea—Ethiopia | 1965—1993 | 450 000—1 Million | Soviet Union, Italy, China, Libya, Sudan, Somalia |
| Nigeria—Biafra | 1967—1970 | 1 million+ | Britain, France, Soviet Union |
| Angolan conflict | 1975—2002 | 300 000— 500 000 | Soviet Union, Cuba, South Africa, USA, Democratic Republic of Congo |
| Mozambique conflict | 1976—1992 | 450 000 —1 Million | Soviet Union, Zimbabwe, Tanzania, Malawi, France, Britain, South Africa |
| Ugandan Civil War | 1981—1986 | 100 000—500 000 | Sudan, Britain, Tanzania, North Korea, Libya |
| Second Sudan Civil War | 1983—2005 | 500 000 —1.9 Million | USA, Libya, China, Iraq, Iran, Uganda |
| Somalia Civil War | 1988— 1990 | 300 000—400 000 | USA, Libya, Ethiopia, UN Force |
| Burundi ethnic conflict | 1988—1993 | 250 000+ | Rwanda, Democratic Republic of Congo |
| Liberian Civil War | 1989—1997 | 200 000+ | Libya, Ivory Coast, Burkina Faso, ECOWAS Force, Sierra Leone |
| Rwanda Civil War | 1990—1993 | 800 000+ | France, Zaire, Uganda, Burundi |
| Sierra Leone Civil War | 1991— 2002 | 100 000 + | Liberia, mercenaries, Britain, ECOWAS Force, UN |
| Democratic Republic of Congo Civil War | 1996—2003 | 1 million + | Rwanda, Burundi, Uganda, Angola, Zimbabwe |

**Table 2.1 Contd. Notable Sub-Saharan African Conflicts, 1960-present**

| Nigeria – Boko Haram | 2010 - present | 5000+ | Cameroun, British Forces |
|---|---|---|---|
| DR Congo (Zaire) | 2013 - 2017 | 999+ | none |
| Burundi | 2003 - 2015* | 25-999 | |
| South Sudan | 2013 - present | | |
| Northern Mali conflict | 2012 - 2017 | 5000+ | |
| Nigeria – Conflict in Niger Delta | 2016 - 2017 | 2300+ | |
| Islamist Insurgency in Mozambique | 2015 - 2018 | | |
| Boko Haram in Cameroun | 2017 - present | 3000+ | |

Notes: Adapted from Jackson (2000) and extended from 2000 to 2018 by using Uppsala Conflict Data Program and Armed Conflict Location and Event Data Project (ACLED Database)

## 2.4.1 Types of Conflicts

There is no single correct interpretation of the different types of conflict in Africa or anywhere else in the world. Each conflict has its own unique set of circumstances and causes. However, there are different trends and patterns of conflict in different regions and historical eras. The challenge for government is to understand the conflicts and put measures in place to prevent these conflicts. In SSA, there are different types of conflict, but three distinct categories are most evident in the region. They are:

**(a) Factional wars**

Factional wars are fluid by nature. There is rarely a defined front line and fighting is frequently opportunistic rather than strategic. Warfare is low tech and small arms are the main weapons. Such wars are not costly and can easily be sustained without external support. Frequently, these conflicts move rapidly from the original cause to revolve around the exploitation of commercial, mineral and natural resources. Factions will seek to involve, exploit and control a significant proportion of the civilian population in order to sustain the conflict. Countries

currently affected by factional warfare are Somalia, Liberia (internally), Uganda (internally) Namibia, Nigeria, South Sudan, Sudan and potentially Cote D'Ivoire.

**(b) Genocide and ethnic based conflict**

Ray (2011) postulates what is known as the fractionalisation index. This index is used as an independent variable in several empirical studies on conflict (Collier and Hoeffler, 2004; Fearon and Laitin, 2003; Miguel, Satyanath, and Sergenti, 2004). But the empirical connection between fractionalisation and conflict is missing or at best weak. Another approach of examining fractionalisation is pursued by Montalvo and Reynal-Querol (2005) who conduct the first empirical study relating conflict to ethnic polarisation, drawing on the earlier theoretical work of Esteban and Ray (1994, 1999). Their contribution is important because it provides econometric support for the proposition that deep cleavages along large group lines might affect conflict. However, Esteban et al. (2012) investigate the complex relationship between ethnic divisions and conflict and what the notion of 'division' entails. They argue that ethnic divisions' conflict typically happens as a result of individuals or groups wanting either a public good - which is ideological or religious supremacy - or political power or private good, such as oil resources or mining revenues.

The last decade has seen the re-emergence of genocide and ethnically based conflict. Centrally directed and involving the poisonous use of propaganda, these conflicts spread like wildfire and leave a huge death toll, massive displacement, fear and confusion. Ethnic and genocidal fighting tends to be extremely low tech using knives, machetes and occasionally small arms. A distinguishing characteristic is the speed with which genocidal attacks take place and the high degree of central organisation and planning involved. The eastern region in Nigeria recently experienced a low-grade genocide where herdsmen killed and massacred a significant amount of local residents who were mostly Christian farmers over grazing rights. Burundi is also at immediate risk of genocide. The potential similarly exists in the Democratic

35

Republic of Congo (DRC) in the Kivu region. A number of other countries, most notably Cote d'Ivoire are experiencing outbreaks of ethnic and religious violence (DFID, 2001).

## (c) Regional conflict

African countries are plagued with regional conflicts, where the onset of a conflict on one region leads to conflict in another region (Annan, 2014). Arrous and Feldman (2013) find that civil conflict onsets are more likely in regions with the following traits: low levels of absolute welfare in terms of education; strong relative deprivation with regard to household assets; strong intraregional inequalities; and combined presence of natural resources and relative asset scarcity. The consecutive conflicts in Liberia, Sierra Leone, Côte d'Ivoire and in the Democratic Republic of Congo may be seen as having certain continuity. When a particular conflict appears to be settling down, another one begins feeding the incessant flows of refugees, displaced persons, and even combatants moving from one war to another.

Throughout the 1990s, Guinea - a neighbouring country to Liberia - received a record inflow of refugees. With nearly a half million Liberians and Sierra Leoneans counted by the United Nations High Commissioner for Refugees, Guinea has topped the ranks of African host countries since 1999. However, Guinean authorities have long had very little control over their own territory. Their failings were especially obvious in the forested areas of the country, the site of many refugee camps. The Guinean government proved unable to prevent the militarisation of these camps, from which Liberian and Sierra Leonean combatants increased the raids against troops loyal to Charles Taylor, who had managed to take power in Monrovia in the meantime.[20] The Taylor administration ordered its own forces to strike back in Guinea, forcing several hundred thousand Guineans to flee their villages. These Guineans, "displaced" in their own country, had initially not had much to do with power struggles in neighbouring

---

[20] Charles Taylor was a former Liberian President. He served from August 1997 to August 2003. He was accused of war crimes and crimes against humanity.

states. The opposing forces in these conflicts were encouraged to be self-sustaining through the exploitation of natural resources. Similarly, the war in the DRC involved the armed forces of eight countries, and the DRC sought to take the war back into Rwanda, Burundi and Uganda. The Sudan conflict has retained its strong regional dimension.

## 2.4.2 Causes of Conflicts

**(a) Weak states and state collapse**

The weakening and collapse of state institutions has caused internal and regional conflicts. Collapse of a state arises out of a long and degenerative process; it is usually not a sudden occurrence. Unable or unwilling to make the sacrifices necessary to maintain popular support, governments begin to operate through coercion, corruption, and the cult of the "strong" leader to secure political power and control of economic resources (DFID, 2001). In spite of the obvious deficiencies of such governments, the principle of state sovereignty usually allows them to maintain the authority as the head of state – and thus international recognition - and all other benefits attached to the position. The degenerative process of the state can also deteriorate the security sector and the judicial system.

The state finds itself unable to provide basic social services or security to its people. The erosion of infrastructure completes the breakup of the state. This is usually accompanied by a violent competition for power between different groups and factions, who sometimes identify themselves in ethnic terms. One faction may predominate over time but this does not necessarily result in the resolution of the conflict; rather, it may lead to a failed state. When this happens, state building will be a complex task. The process of holding elections can easily become a vehicle not for democratisation, but for the consolidation of personal and abusive rule, as happened in Charles Taylor's Liberia. Migdal (1988) emphasise that one of the major difficulties of developing countries is that the states are often too weak and lack the capacity

to raise revenue and govern effectively. State capacity building and weak institutions are major concepts in the development policies of a number of African countries. The ability to raise enough taxes to build infrastructures, protect property rights, and increase private income is still a major issue in the region. Also, the high rate of corruption, the inability to enforce legal proceedings, and the mismanagement of taxes raised by government officials plagues quite a number of the countries in the region (Meredith, 2005). International data suggests that the ability to raise revenue from advanced tax systems is strongly positively related to the ability to support markets as well as to the level of economic development (Besley and Persson, 2009).

Contemporary studies of African politics, however, attribute the weak states to changes in political rules introduced into Africa as the trailing edge of a global third wave of democratisation (Bratton and Van deWalle, 1997; Ndegwa, 2001). They conclude that the dynamics of confrontation and bargaining among various political actors has led to the opening of different paralysed regimes in the 1990s. African states are plagued with different regime types, from virtual democracy (Diamond, 1987) to semi democratic regimes (Gyimah-Boadi, 2004) to semi-authoritarian regimes (Ottaway, 2003). In recent years, a number of African governments have moved forward with new-style programs to build public sector capacity. These programs are characterised with reforms in the public sector, such as efficient and effective management systems, enforcing law and order, combatting corruption in the society and large investments in the national army (Levy and Kpundeh, 2004).

In addition, societies with weak government institutions and few checks and balances are likely to be more prone to armed conflict. Democratic governments are expected to be more able to mitigate conflicts than any other regime type. The reasons could be: first, in democratic political systems, citizens are informed by independent mass media about the state of their environment and economy, as well as by government policies, thus subjecting their government's actions to close scrutiny; second, they also have the opportunity to express freely

their opinions (Payne, 1995); third, through electoral mechanisms opposition parties are free to seek redress to their grievances[21] and express their preferences without state repression. A working electoral system also provides political leaders with incentives to satisfy their citizen's demands if they wish to retain power. Arguably, if democratic political leaders are responsive to a larger winning coalition and lack sufficient resources to reward their comparatively large group of supporters with private goods, then they have to resort to the provision of public goods – including economic prosperity – to ensure continued political support and, thus, their survival in office (Bueno de Mesquita et al., 2003).[22]

**(b) Economic decline and economic shock**

Many African countries have undergone a process of steep economic decline over the past three decades (Ndulu, et al., 2007). This is partly as a result of conflict itself, coupled with corruption and bad economic management. The region's economic decline is also a consequence of large national debt and unfavourable terms of trade with the rest of the world. As a result of the economic decline, governments find themselves unable to provide jobs, better wages and improved public services. This may lead to young men becoming disillusioned, frustrated and marginalised consequently leading to armed conflicts and looting of natural resources to make financial gains. Negative shocks to the economy can take various forms, ranging from natural disasters to shifts in terms of trade and commodity prices. The Ethiopian famine of 1974 was the main factor in the overthrow of Haile Selasse's government and the violence that ensued. Famine can cause mass displacement, increasing pressure on scarce resources.[23]

---

[21] Reynal-Querol (2002) argues that what matters for conflict is not necessarily the degree of democracy but rather the type of democracy. She shows that proportional representation systems have a lower probability of experiencing a civil war than majoritarian ones because such systems are likely to be more inclusive and hence curb grievances.

[22] There are numerous studies, (Collier and Hoeffler, 2004; Fearon and Laitin, 2003; Gleditsch and Ruggeri, 2010; Elbadawi and Sambanis, 2002) on the relationship between political institutions and intrastate conflict with the majority focusing on the effects on democracy on civil conflict onset.

[23] Haile Selassie was crowned emperor in 1930 but exiled during World War II after leading the resistance to the Italian invasion. He was reinstated in 1941 and sought to modernize the country over the next few decades through social, economic and educational reforms. He ruled until 1974, when famine, unemployment and political opposition forced him out of office.

**(c) Presence and Discovery of Natural Resource**

Africa accommodates two types of resource-based conflict: wars of resource scarcity and wars of abundance (Le Billion, 2000). The most common conflicts of scarcity relate to the control of land and water rights. In both cases, the crucial element is how competing interests for those resources are managed. Countries whose economies are dependent on natural resources - such as oil and minerals - face a higher risk of conflict. In these wars of abundance, groups compete for control of these resources, which become the "prize" for controlling the state and can lead to coups, as in Sierra Leone and the DRC. Unfair exploitation and poor management of resource-rich regions can also lead to secession. The role of the private sector is critical in wars of abundance, as belligerents rely on its capacity to exploit and commercialise the resources.

**(d) Resource Scarcity**

Homer-Dixon (1994) distinguishes between three kinds of resource scarcity that can increase the risk of violent conflict:

*Environmental change*, which refers to a human-induced decline in the quantity or quality of a renewable resource that occurs faster than it is renewed by natural processes;

*Population growth*, which reduces a resource per-capita availability by dividing it among more people; and *unequal resource distributions*, which concentrates resources in the hands of a few people and subjects the rest to greater scarcity. This often results when property rights that govern resource distribution change as a result of large-scale development projects or new technologies that alter the relative values of resources.

A number of countries in the region have relatively high natural resource endowments. However, these high natural resources may increase loot-seeking (rent) activities and perhaps explain the high corruption in the region. This further exacerbates conflict due to ethnic diversity; and, as Collier and Hoeffler (1998) argue dependence on natural resources strongly increases the risk of civil war in Africa (Lewis, 2007). There are the resource-rich countries

(e.g. Nigeria, South Africa) and resource-poor ones (e.g. Somalia, Mali). Oil exporting countries include Angola, Chad, Congo Republic, Cote d'Ivoire, Equatorial Guinea, Gabon, Ghana, Sudan and Nigeria. These countries have different legal origins based on their colonial history, with French and English being the common legal origins. Arguably, these legal origins have impact on the effectiveness of the government (Besley and Persson, 2009). Likewise, the countries are in different stages of development; most of them are low income, a few are medium-income, while none are in the high-income group (World Bank, 2007). Table A.1 in Appendix *A* provides a short analysis of the structure of SSA economies.

Abundance of natural resources is seen as an important factor in the incidence of civil conflict (Buhaug and Rød, 2006; Collier and Hoeffler, 2004; Lujala, Gleditsch, and Gilmore 2005). Empirical studies also conclude that a country's wealth gained from excessive natural resource leads to slow-growth, rent-seeking, corruption and rebel looting, all of which can generate or prolong civil war. This development is what is also partly known as ''resource curse.'' For example, diamonds are often seen as a major source of rebel financing in conflicts such as those in Sierra Leone and Angola.[24] Oil wealth has also been associated with civil conflict onset, either through the effect of weakening state apparatuses or by raising the prize for state capture (Fearon and Laitin, 2003).

According to Le Billon (2001), resource dependence is also associated with greater socioeconomic inequalities. A relevant question would be whether regional welfare inequalities follow the same pattern as the distribution of natural resources in a country, that is, whether people in resource-rich regions enjoy more social welfare than people in resource-poor regions, this is often not the case. For instance, the oil-rich Niger Delta in Nigeria is one

---

[24] Angola is the third largest producer of diamonds in Africa while Sierra Leone produces a large amount as well.

of the poorest, least developed and least reciprocated regions for its contributions to national wealth (Ikelegbe, 2001).

The majority of regions in SSA provide examples that regional inequality can be a strong motivation for rebellion when a region is a source of natural resource wealth but receives little of the bounty. In Chad, the resource-rich southern regions have called for greater autonomy as they demand to receive more of the revenues from the oil discoveries in their part of the country. The oil has been seen to fuel southerners' ambitions for a federalist state, if not for outright separation (Humphreys, 2005). Another example is the conflict between the Senegalese government and the Movement des Forces De´mocratiques de Casamance (MFDC). The Casamance region is endowed with more natural resources than the rest of the country. The Dioula people believe that they do not benefit from the richness of the region because they feel discriminated against with regard to education policies and land allocation decisions (Humphreys and Mohamed 2005; Minority Rights Group International 1997).

**(e) Religion and the politics of religious conflicts**

Religious intolerance has been identified as a major source of violence in societies, existing as long as the history of mankind and permeating all forms of human civilisations (Gofwen, 2004). Religion could serve, and has indeed served, as an instrument of social harmony in many civilisations. Paradoxically, however, it has also served as a motivation for violence, hence its indication in some literature as a 'double-edged sword' (Maregere, 2011; Obasi, 2009). Research into the link between religion and conflict has been growing in academic literature. It is often depicted as a trigger factor in many other forms of conflict.

Theoretically, religious factors have been linked to conflict. First, from a socio-psychological point of view, diverse religious identities - similar to ethnic and other social identities - form a group identity and can result in escalating inter-group dynamics. Research demonstrates that people often privilege in-group members over outgroup members (Stewart,

2009). As a result, violent escalation becomes more probable. Second, religious identities are special; they are connected to particular religious ideas. Such religious ideas are shared values and norms legitimised by a sublime source, and therefore it might be argued that they are hardly subject to negotiation and compromise given their accepted supernatural origin (Horowitz, 2009; Svensson and Harding, 2011). This can also entail a higher propensity for violent behaviour by religious actors; non-believers and adherents to different religious traditions might be converted by force, and heretics may have to be punished.

Third, religion – or more precisely, religious factors – might be understood as a possible mobilisation resource for and in conflicts. This idea is by no means incompatible with the former two ideas, but this theoretical branch stresses the role of leaders in the organisation of collective action (De Juan, 2009; Fearon and Laitin, 2000). In order to mobilize followers, leaders can choose from different identities, such as religious, ethnic or other social identities. Sometimes, religion may be the most rational choice for them. Basedau et al. (2011) establish link between religion and conflict using the mobilisation hypothesis. They argue that religious structures such as overlapping ethnic and religious identities are prone to mobilisation; once politicised and escalation to violent conflict becomes probable.

Due to religion being at the heart of a community's value system in most parts of the world, people who practice a different religion can be easily labelled as worthless (Goldstein, 1994). A threat to one's beliefs is also a threat to one's very being and that may be the reason why some people are willing to fight for their religious beliefs. Religious beliefs and extremism of these beliefs has led to destruction of nations as well as intra-state conflicts. An example of this is Syria. Most religious groups teach that war is wrong, and some religions teach that violence should be used as a last result while others believe violence of any form is wrong. The question that stems from these urgings is thus: are religious differences a cause for conflicts or

merely a character of the conflict? Or is religion an instrument used to mobilise the population for conflict?

Tuscany (2004) suggest that religious factors enhance the difficulty in managing conflicts; this worsens the violence against the civilian population - leading to more intense conflicts - and decrease the chance that these types of conflicts might be peacefully settled through negotiated agreements. Overall, religious factors tend to play a more descriptive role in explaining the escalation and termination (or lack thereof) of armed conflicts than in explaining why they start. Sells (2003) distinguishes between 'religion identity' (religion as a cultural phenomenon) and 'religious identity' (religion as an ideological phenomenon). Religious influence can help mobilise nonviolent movements for democracy and regime change (Nepstad, 2011). In general, earlier quantitative research on religion and conflict has been somewhat skewed toward studying religion as a factor leading to conflicts, but not examining cases where religion might not be a factor in the conflict but plays an important role in peace building, though some work on this has emerged in recent years (Powers, 2010).

Religious conflicts are based on the assumption that at least one side has raised explicit demands from the onset of the conflict relating to religious issues. Conflicts over the role of religion in society or the state are likely to emerge between different religions, especially if the religions in question claim to possess universal validity. Furthermore, militants might be motivated by specific religious rewards to be gained from participating in acts of violence. In fact, some studies have found positive evidence that conflicts fought along religious lines may be more intense and endure longer than other conflicts that are not fought along such parameters.

**(f) The politics of religious conflicts**

Religion may also be understood as a possible mobilisation resource for and within conflicts. This theoretical strand stresses the role of leaders in the organisation of collective action. In

order to mobilize followers, leaders can choose from different possible identities; under specific conditions, religion may be the most rational choice for them to make. The politicisation of religion might increase the risk of a violent escalation of a conflict taking place, even if the conflict is actually principally rooted in political or socioeconomic problems (Hasenclever and De Juan, 2007). Basedeau et al. (2013), show that religious overtones in armed conflict do not necessarily depend on religious politicisation. Ultimately, it is the elites themselves who have to convince believers that they should engage in a particular type of behaviour. These recent academic approaches emphasize the importance of looking not only at interfaith relations but also at the relationship between the religious groups (and their leaders) and the conflict parties. Basedau et al. (2011) find that inter-religious armed conflict is particularly likely when religious and ethnic identity boundaries run parallel to each other; religious polarisation is dangerous when combined with pre-existing social tensions and perceived discrimination against a particular group or groups.

## (g) Ethnicity and Inequality

Esteban and Ray (2011), present a link between conflict and measures of dispersion such as income inequality and ethnicity. The model allows for conflict over private goods and public goods. The authors result is that the equilibrium level of conflict can be described by a weighted average of a particular inequality measure (the Gini coefficient), and the fractionalisation index should be closely related to conflict. The authors develop a theoretical view of conflict across groups with different levels of cohesion, allowing for such "public" and "private" prices as well as different mixes of those prices. They show that equilibrium intensity of conflict is linearly related to three measures of distribution only; polarisation (P), fractionalisation (F), and a Greenberg-Gini index of ethnic difference (G). The weight of each index in explaining conflict and its intensity depends on the particular nature of each conflict. The appropriate choice of division depends on the nature of the conflict—whether it is over public or private

goods - and the extent of cohesion within the groups that are engaged in conflict. The results obtained shows that ethnic polarisation will influence conflict if the prize is public and group cohesion is high, and ethnic fractionalisation will influence conflict if the prize is private (and group cohesion, once again, is high).

Finally, the Greenberg-Gini difference index becomes relatively important in explaining conflict if group cohesion is low. The weights in the linear combination match up to the relative importance of public and private goods in the conflict prize. Specifically, the impact of polarisation increases with conflict over *public* goods, while the impact of fractionalisation increases with the *private* component of conflict. The Esteban-Ray framework also tells us that the importance of the three indices depends on the extent of within-group cohesion present in intergroup conflict. In particular, when there is no cohesion at all, the well-known free-rider problem dominates, and all conflict vanishes when the population is large. The authors' fractionalisation index is mostly used as an independent variable in several empirical studies on conflict (Collier and Hoeffler, 2004; Miguel et al., 2004), but the empirical connection between fractionalisation and conflict is missing or at best weak.

Montalvo and Reynal-Querol (2005) pursue another approach of examining fractionalisation conducting the first empirical study relating conflict to ethnic polarisation, drawing on the earlier theoretical work of Esteban and Ray (1994, 1999). Their contribution is important because it provides econometric support for the proposition that deep cleavages along large group lines might affect conflict. Østby, *et al.,* (2009) also present hypotheses on socioeconomic welfare link to conflict. The authors uncover that absolute deprivation in terms of education leads to enhanced conflict risk in a region.

**(h) Polarisation and Fractionalisation**

These two terms are used to determine the incidence of conflict. Some scholars have used this measure to determine how intense or low a conflict can be within groups and between groups of people. Esteban and Ray (2008) explain the two measures in theory.

*Fractionalisation*

A fractionalisation index *F* (mostly used in research papers) is intended to capture the degree to which a society is split into distinct groups. The measure has been widely used in studies that attempt to link ethnic diversity to conflict, public goods provision, or growth (Alesina, Baqir and Easterly, 1999; Collier and Hoeffler, 1998; Easterly and Levine, 1997; Fearon and Laitin, 2003). Let $n_i$ be the share of the population belonging to group i, i = 1,…,G. The fractionalisation index is defined as the probability that two randomly chosen individuals belong to different groups. The probability that an individual of group *i* is chosen is $n_i$. Hence, if that probability is matched with someone from another group, the probability then becomes $n_i(1 - n_i)$. It follows that the probability that any two individuals belong to different groups is:

$$F = \Sigma\, n_i(1 - n_i) = 1 - \Sigma\, n_i^2 \tag{2.5}$$

F is a strictly concave function of each population share. From this firm concavity we can derive the following properties of F:

(a) any transfer of population from a group to a smaller one increases F;

(b) for a given number of groups, *G*, F is maximised at the constant population distribution over these groups;

(c) over the set of constant distributions F increases with the number of groups; and

(d) the split of any group with population n into two new groups with *n'* and *n''*, *n' + n'' = n,* increases F.

*Polarisation*

Polarisation is conceptualised in Esteban and Ray (1994) as the sum of interpersonal "antagonisms." Antagonism results from the interplay of the sense of group identification (group size) and the sense of alienation with respect to members of other groups (inter-group distance, *bij*) Esteban and Ray's (1994) polarisation measure *P* can be written as

$$P(\sigma, b) = \Sigma_i \sum_{j \neq 1} n_i^{1+\sigma} n_j b_{ij} \tag{2.6}$$

where b is the matrix of inter-group distances and σ is a positive parameter that captures the extent of group identification. The authors derive restrictions on σ that bound it both above and below (Duclos et al., 2004). A situation of particular relevance that could occur is when individuals in each group feel equally alien towards all groups other than their own.

Properties of polarisation include:

(a) a transfer of population from a group to a smaller one increases P if both groups are larger than 1/3. If the two groups are smaller than 1/3 the equalisation of populations will bring P down;

(b) for any given number of groups, *P* is maximized when the population is concentrated on two equally sized groups only;

(c) over the set of uniform distributions *P* decreases with the number of groups, provided that there are at least two groups to begin with; and

(d) the split of a group with population *n* into two groups with n' and n", n' + n" = n, increases *P* if and only if n ≥ 2/3. The distinction between the two sets of properties clearly shows that the two measures behave quite differently from each other, except when there are just two groups. The difference is that fractionalisation is maximal when each individual is different from the rest, while polarisation is maximal when there are only two types of individual.

## (h) Climate-related Conflicts

Despite growing research effort, the relationship between climate change and conflict remain uncertain. Nel and Righarts (2008) and Besley and Persson (2011) suggest that climate disasters increase the risk of armed conflict. Slettebak (2012), on the other hand, finds that if anything, climate-related disasters seem to reduce the risk of armed conflict onset. Notably, all three studies are susceptible to unobserved country heterogeneity in the sense that the distribution of natural disasters across countries probably is non-random. The use of fixed effects transformation may be used to solve this econometrics challenge as proposed by Bergholt (2012).

Arguably, most existing studies linking the two variables focus on the role of precipitation in explaining conflict incidence, finding past conflict in Africa more likely in drier years (Miguel et al., 2004). Hendrix and Salehyan (2012) using - SCAD data - examined the effect of deviations from normal rainfall patterns on civil conflict as well as civil unrest for the past twenty years. They find that wetter and drier than normal conditions are associated with both civil conflicts and civil unrest.[25] Zhang et al. (2001) suggest that climate change affects conflict through its effects on agricultural productivity. Theisen et al. (2012), using various drought measures, do not find any effect of drought on civil conflict in Africa during the 1960 - 2004 period. Hendrix and Glaser (2007) examine the impact of short-term climate change (inter-annual variability in rainfall) on the onset of civil conflict in Sub-Saharan Africa. They find that positive changes in rainfall significantly decrease the risk of conflict in the following year. Arguably, armed conflict is more likely to occur in states where existing institutions and mechanisms for conflict resolution cannot provide people with the assurance that climate-induced economic problems will be resolved without recourse to violence (Koubi et al., 2012).

---

[25] A new dataset, the Social Conflict in Africa Database (SCAD), provides highly useful information on low levels of violence in African countries (e.g. demonstrations and riots) in recent years

Formal institutions that help enforce commitments inter-temporally can ease commitment problems in situations in which each individual or group's effort to increase its own well-being reduces the well-being of others (Powell, 2006).

Most African countries remain highly dependent on rain-fed agriculture for both employment and economic production, with agricultural products accounting for more than 50% of the GDP and up to 90% of employment across much of the continent (World Bank Report, 2009). Thus research interest on the role of precipitation is interesting, but is inconclusive on changes in conflict risk, as climate models disagree on both the sign and magnitude of future precipitation change over most of the African continent (Christensen et al., 2007). This uncertainty confuses efforts aimed at building a more comprehensive understanding of the human costs of climate change and planning appropriate policy responses.

## 2.4.3 Internal and External Conflicts

Internal conflicts are defined as conflicts that occur within the state, either between two opposition groups or between the government and an opposition group. A conflict is considered active and included in the data when there are at least 25 battle-related deaths per calendar year. Conflicts are also categorised based on their intensity level. Conflicts with 25 battle-related deaths - but less than 1000 - are minor conflicts, while those with at least 1000 battle-related deaths are categorised as wars (UCDP, conflict data). Conflicts with a minimum of 1000 battle deaths in a single year have afflicted a third of all nations; this internal conflict is also persistent (Blattman and Miguel, 2010). The proportion of countries involved in civil conflict at a single point in time increased steadily through the last half of the twentieth century, peaking in the 1990s at over 20%.

The international community can also get involved by supporting one of the parties engaging in conflict, either by providing training or aid or sending peacekeeping forces to the area (Jackson, 2002). Internal conflict can also be a direct result of political instability, lack of infrastructures, and consequences of a weak or failed state. Often times, these conflicts can be the result of a deliberate creation of war economies, which is beneficial for both local and external actors. Ethnic intolerance - as mentioned in Section 2.4.2 - could also result in internal conflicts. A prominent article by Easterly and Levine (1997) argues that ethnic heterogeneity in African states can explain much of the underdevelopment and instability in the region. Ethnic heterogeneity is also said to be one of the causes of poor government policies, which in turn leads to a negative development and lack of structural policies like education and infrastructure. A higher degree of ethnic polarisation would mean implementing growth-reducing policies and increase in political instability, while a higher degree of ethnic diversity leads to the adoption of different public policies leading to more policy outcomes if compared to a society with more ethnic homogeneity (Easterly and Levine, 1997).

These intolerances in the society could range from religious differences to language and social identity. Aleyomi (2012) states the different types of ethno-religious conflicts in Nigeria, the most recent being Boko-Haram insurgencies. The large-scale bomb attacks by the movement appear to be escalating. The different ethnic groups in the northern region are often used in the political game and are played up against each other to create conflict and more power in the hands of the southern power elite (Lindberg, 2013).

South Africa also suffers from ethnic conflicts that are deeply rooted in inequality and uneven development in the country. This has caused ethnic groups (Xhosas, Zulus and even Afrikaners) to mobilise to compete for resources along ethnic lines. It therefore suggests that multi-ethnic countries are likely to experience distributional conflicts. Niger, Sudan, and Chad (among a host of other countries) have also experienced civil wars fought predominantly along

ethnic and or racial divisions (Reynal-Querol, 2002). Furthermore, Cote d'Ivoire - the one-time economic power house and beacon of stability in West Africa - experienced civil conflict that was deeply rooted in ethnic-religious divisions and identity. Aggravated by politics of exclusion, the country erupted into a full-blown civil war in 2002 (Annan, 2014). Following the explosion of the civil conflict into a violent war, several peace initiatives were adopted, but failed to resolve the conflict until the successful signing of a peace accord five years later.

It is important to note that there may be other underlying root causes to these conflicts. Ethnicity and religion are more apparent than the other factors such as land ownership, territorial rule, natural resources, politics and inequality. Globalisation is another factor that can help explain the many internal conflicts. Different opposition groups and organisations are involved in Africa today with economic interests in the area and in profiting from the wars, uncertainty, and desperation. These factors may contribute to the grievances or greed which leads to conflicts.

Cardenas et al. (2010) define external conflicts as conflicts between two or more states. These conflicts sometimes occur as a result of spill-over effect from another state or disputes between two or more states. Occasionally, conflict spill-over results in major disputes between two or more states and it become more difficult to manage or resolve. Murdoch and Sandler (2002) took the important step of recognising the likely importance of spill-over effects on neighbouring countries, considering directly contiguous countries (e.g. those sharing a border). Using a basic Solow growth model and adding domestic and adjacent conflicts, they found that for a sample of 84 countries during the period 1960 - 1990, civil wars had a significant negative influence on the steady-state level of GDP per capita for both the conflict-afflicted country and its neighbours. Moreover, while part of the negative civil war effect works on growth through the classical channels of capital and labour, the largest effect was found to come through the unobserved, country-specific channel. Dunne and Tian (2015) - analysing a panel data of 26

African countries for the period 1960 - 2010 - find that there is a negative effect of conflict on neighbouring countries as well as host countries on the economy. Using weighted matrices for the conflict variable - based on distance measures and distinctive primary and secondary neighbours - they find that secondary neighbours are not affected by conflicts. In literature, external conflicts are closely linked to external wars.

Cardenas et al. (2010) find that external wars constituted about 2% of their observations for external conflicts while intermediate and minor conflicts were about 1% for each observation. Besley and Persson (2008) suggest that external wars may induce a common interest across different groups in the society, while internal conflicts or civil wars fundamentally reflect conflicting interests. These two forms of conflict may therefore have opposite effects on the incentive to build state capacity. On the basis of these assumptions, we ask how these two types of conflict impact on the state capacity in the second empirical chapter.

## 2.5 Conclusion

Perhaps the most important finding of the literature on the economics of conflict is that per capita income (proxy for economic growth) is systematically and *negatively* correlated with civil war, whether one studies "incidence" or "onset." This is a result that recurs in the literature, especially in large-scale cross-country studies of conflict (Collier and Hoeffler, 1998, 2004; Fearon and Laitin, 2003a; Hegre and Sambanis, 2006). Nonetheless, even this seemingly robust finding is fraught with difficulties of interpretation. The conclusion of most studies is based on cross-country studies. Ray and Esteban (2017) argue that overall growth is made up of two kinds of changes: one that creates a larger pot to fight over - therefore increasing conflict - and another that raises the opportunity cost to fighting - therefore decreasing conflict. Whether

conflict is positively or negatively related to growth will therefore depend on the type of growth - specifically, how uneven it is across sectors or groups.

With regards to state capacity and conflict, the theoretical implication is that a proper examination of the role of greed in the onset of civil war needs to explicitly account for the impact of state capacity. Snyder and Bhavnani (2005) extend the lootable resource theory by looking at the capacity of the state to extract revenue and maintain future tax revenues. Researchers often contrast grievance explanations of conflict onset with those that emphasise greed. While Collier and Hoeffler (2000) discount the effect of grievances because they are more susceptible to collective action problems, the quantitative research into conflict onset has found support for grievance-generated civil wars. Hegre et al. (2001) found that the form of government significantly affected the risk of conflict.

While the recent quantitative literature examining the impact of conflicts can be grouped into greed versus grievance, another angle of conceptualisation would be to divide the arguments of conflict onset into willingness versus opportunity (Most and Starr, 1989), or opportunities and motives (Taylor, 2003). Regardless of how one categorises the literature, there has been a noticeable emphasis on the rebels – their motivations, capacities, or physical environments. In the case of Sub-Saharan African countries, it is assumed that conflicts arise as a result of one or more of the arguments above. Conflicts in this region could be because of greed, grievance, poverty, inequality, natural resources, land acquisition, and opportunity cost to take up arms among other root causes.

# CHAPTER 3

# Effects of Economic Growth on Conflict: An Empirical Analysis on Nigeria

## 3.1 Introduction

In recent years the phenomenon of conflicts and economics has gained increasing attention from academics and policy-makers alike. This concern is understandable, since conflict is one of the major causes of economic downturn; between 1960 and 1995, nearly 18.5 million people were estimated to have died from internal conflicts, with over 80% occurring in low-income countries, while half of these took place in Africa (Stewart et al., 2001). Conflicts constitute one of the greatest challenges currently facing the West African sub-region (Annan, 2014); issues of identity, resource allocation, power struggle, governance, and state sovereignty - sometimes combined with the personality question - have all combined to cause staggering loss of life, destruction of property, and environmental degradation (Bakwesegha, 1997). Conflicts' being unfavourable to development is one of the major findings in the empirical literature, although the reverse may well be the case. This has triggered a growing body of research that highlights the association between economic growth and conflict.

Bolhken and Sergenti (2010) suggest that the effect of economic growth on conflict can be determined by three plausible mechanisms. For the purpose of this study, the third mechanism is used as main focal point.[26] Sambanis (2001) surveys the literature on economic studies of civil wars and conflicts, showing that there is a consensus of a robust empirical relationship between poverty, slow growth, and increased likelihood of conflicts and prevalence. However, the existing literature does not adequately address the possible

---

[26] The third mechanism posits that growth can reduce the number of conflicts if the opportunity cost of engaging in a conflict is lower during slow growth. Such periods may be associated with fewer job opportunities, low wages while the benefits of looting or participating in a conflict may appear more attractive.

endogeneity of these economic variables to conflict, and thus does not convincingly establish a causal relationship (Miguel et. al, 2004).

Only a handful of studies examine economic growth and conflicts in Nigeria. Iyoboyi (2014) finds that there is a long-run equilibrium between conflict, inflation, poverty, unemployment and economic growth. Specifically, they found a positive and significant relationship between economic growth and conflict at the national level. The empirical results also show a direct relationship between conflict and other macroeconomic variables such as inflation, poverty, unemployment and real gross domestic product (GDP). The author employs the dynamic OLS methodology without exploring the potential endogeneity issues associated with economic growth. This study contributes to existing literature by investigating the possibility of endogeneity and heteroscedasticity when analysing conflict and economic growth. This would be analysed by using IV, GMM and PVAR estimation method.

Consequently, this chapter investigates the causal effect of economic growth and conflict using data from Armed Conflict Location and Event Data Project (ACLED) database, Canback database, and the World Development Indicators (WDI). In doing so, the following contributions are added to the literature:  1). addressing the possible endogeneity in order to establish the causality between these two variables; and 2). the conflict is measured at the state level and not national in contrast to the extant literature, particularly Iyoboyi (2014).  To address the possible effect of growth being endogenous in the model, yearly rainfall data is used as an instrumental variable for GDP growth to estimate the impact of economic growth on conflict. Rainfall is a plausible instrument for GDP growth in economies that largely rely on rain-fed agriculture. The instrumental variable method suggests there may exist a causal relationship between economic growth and conflict, rather than a correlation. As such, this study relates to the approach taken by Bohlken and Sergenti (2010), who also employ an instrumental variable estimation method in the context of country-specific empirical growth

research. Furthermore, this study further contributes to the literature by using the PVAR in analysing the relationship between economic growth and conflict. Also, the total number of conflicts in each state in Nigeria at a given year is being measured, which is different from Bohlken and Sergenti, (2010); the authors only considered the ethnic violence between Hindus and Muslims in India.

The rest of the chapter is organised as follows: following the introduction, section 3.2 reviews the theoretical and empirical literature; section 3.3 describes the methodology, data specification and estimation procedures; empirical results are presented and discussed in section 3.4; section 3.5 concludes.

## 3.2 Brief Review of Relevant Literature

Collier and Hoeffler (2004) and Hegre and Sambanis (2006) suggest that slow economic growth and low-income levels are important in predicting which countries will experience a conflict; for example, armed civil conflict is more likely to occur in poor countries than in rich[27]. This can be the result of frustration and grievances, ease of recruiting rebels when even modest compensations to the rebel and his/her family exceed their present income, or a lack of military and state capabilities to prevent and suppress armed conflicts.  The political and social unrest that often precedes the onset of armed conflict often erodes economic institutions, causing economic havoc and making it more difficult to maintain peace.

A few contemporary growth studies have taken a keen interest in conflicts in Sub-Saharan Africa. For example, Merrouche (2008) argues that demining programs in Mozambique has generated positive economic effects. Another line of argument in the literature stresses the importance of neighbourhood effects in Africa (Brock and Durlauf,

---

[27] Armed civil conflict is regarded as violent conflict.

2003). Research on the effects of ethnic heterogeneity on conflicts in Africa has also shed light on the mechanisms underlying the incidence. Paul Collier in his book *The Bottom Billion*, writes about the conflict trap, where past conflicts increase the probability of future ones. In such environments, negative association between conflict and growth would be an ongoing relationship.

Combining rich household data with unique data on violence in Rwanda, Serneels and Verpoorten (2012) find that households and localities that experience more intensive conflict lag behind in terms of consumption and growth, relative to those that experienced less intensive conflict. Their study suggests that lower economic performance in some areas causes the onset of conflict. Bohlken and Sergenti (2010) find that economic growth reduces the incidence of conflict. They examine 15 states in India, with particular reference to the Hindu-Muslim community; they find economic growth has a negative and significant effect on ethnic riots. They postulate three possible mechanisms through which growth can affect the incidence of riots. All three mechanisms suggest the need for increased growth in the reducing the occurrence of riots. They also addressed the endogeneity problem associated with economic growth with Instrumental Variable (IV) estimation, using percentage change in rainfall as an instrument for growth. The results of the IV estimation are similar to the non-IV estimations, and the authors conclude that the negative effect of economic growth on conflict is not due to reverse causality or omitted variable bias.

Iyoboyi (2014) examines the impact of economic growth on conflicts in Nigeria. Using annual data for the period 1981 - 2011 and employing the dynamic OLS methodology, the author finds evidence of a direct relationship between Nigeria's economic growth and conflict. The author argues that the results are not surprising; given the mono-cultural tendency of the country in terms of crude oil production from which the country gets a bulk of its revenue, this revenue has had a short-lived impact on many conflicts that has occurred in the country. He

argues that violent conflicts in the country are partly due to the drive for control of the nation's wealth. Controlling for other macroeconomic variables, the author finds that poverty, unemployment and inflation are significant variables influencing the nature and dynamics of conflict in the country. The study, however, does not address potential endogeneity with the growth variable. Theoretically, it is assumed that growth variables suffer from endogeneity issues in which causality may be reverse or bi-directional. The author, however, acknowledge the need for the relationship between economic growth and conflict studies at the state level.

Estimating the effect of economic growth on the likelihood of civil conflict is difficult because of endogeneity and omitted variable bias. It is probable that our key explanatory variables - *Growth* and *Lagged Growth* - are endogenous. Conflict can cause damage to physical properties, thus lowering economic growth. Therefore, endogeneity could result from the fact that changes in economic growth in a state may be a result - rather than a cause - of ethnic or religious violence. The expectation of conflicts could deter investments, thereby leading to lower growth. Changes in economic growth could also be correlated with other omitted variables such as weak rule of law, political competitiveness, and income inequality to mention a few, which could not be included in our data due to lack of availability of this data at the state level. Not addressing the potential of reverse causality and omitted variables into account could induce bias in our estimate of the effect of economic growth on conflict.

Overcoming the endogeneity problem, Miguel et al. (2004) include the use of instrumental variables: *rainfall* in Sub-Saharan Africa as an instrument for GDP per capita growth. They find that a 1%-point decrease in rainfall raises the likelihood of a country experiencing conflict incidence by about 2% points and conflict onset by 3%-points. Given that rainfall causes exogenous economic growth shocks, the 2SLS instrumental variable approach indicates not only how growth correlates with conflict, but also justifies the causal assertion. They also argue that weather shocks, or abrupt declines in rainfall per capita, provide plausible

instruments for economic growth in economies that depend primarily on rain-fed agriculture, as is the case in most of SSA. Their empirical study suggests a robust negative relationship between economic growth, instrumented by rainfall and conflict incidence in SSA. However, despite the pioneering instrument for economic growth, the paper used coding for conflict by including states that participate in civil wars in other countries. This measure might give misleading estimates of the effect of growth on conflict. Jensen and Gleditsch (2009) argue that including external participation can give misleading estimates of the impact of growth shocks on conflict, seeing as droughts tend to jointly affect neighbouring countries and countries primarily intervene in neighbouring civil conflicts; common geographical clustering in rainfall and war participation may overstate the causal effect. They re-analyse Miguel, *et al.'s* (2004) proposed model using conflict data restricted to location and the results show a smaller impact and much less robust evidence for a negative impact of growth on the incidence of civil conflict.

Bernauer et al. (2012) on the other hand, use deviation in temperature and rainfall (from long-run averages) as instruments for economic growth in a global dataset for the period 1980 - 2004. They find no significant link between climate variability, economic growth, and the risk of conflict onset. Their conclusion remains robust for a subsample including only African countries, which contradicts the results of Miguel, *et al.* (2004). The article by Miguel et al. (2004) is further challenged by Ciccone (2011), who argues that a misspecification of rainfall measures may explain the observed negative relation between rainfall and conflict. Some studies focus solely on the reduced-form relation between climate and the risk of conflict. For example, Burke et al. (2009) - using panel data on African countries between 1981 and 2002 by means of fixed-effects and transformed models - find that a one degree Celsius increase in temperature increases the risk of armed civil conflict by as much as 4.5 percentage points within the same year. However, Buhaug (2010) compares different data and model specifications and

concludes that climate variability in terms of temperature is a poor predictor of armed civil conflict. This implies a very real endogeneity problem, because the low-income growth may be as much a result of an approaching armed conflict as of a conflict itself.

### 3.2.1 Research Question and Hypothesis

Previous studies on the economic causes of conflict have suggested that economic growth could have a beneficial effect (Collier and Hoeffler, 1998, 2004; Miguel, Satyanath and Sergenti, 2004; and Olzak, 1992), an adverse effect (Ake, 1974; Harms and Zink, 2005; Huntington, 1968; Olzak, 1992), or no effect at all (Horowitz, 2001) on violence. As earlier stated, one of the mechanisms through which economic growth could influence the occurrence of conflicts is that the opportunity cost of engaging in a conflict may be lower during periods of slower growth. Such periods may be characterised with fewer job opportunities, lower wages and/or lower profits for an ordinary citizen. In terms of foregone wages, therefore, the costs of participating in a conflict may also be lower, while the benefits from looting and/or monetary compensation for participating may appear more attractive (Cameron and Parikh, 2000; DiPasquale and Glaeser, 1998). Consequently, the hypothesis below is developed:

*H1*: *lower rates of economic growth should lead to increase in the onset of conflicts.*

## 3.3 Empirical Methodology

### 3.3.1 The Model

The starting point of our empirical analysis is based on the linear equation employed in Bohlken and Sergenti (2010):

$$C_{it} = \alpha + \beta_0 Y_{it} + \beta_2 Z_{it} + \varepsilon_{it} \qquad (3.1)$$

where $C_{it}$ is the measure of conflict, $\alpha$ is constant term, $Y_{it}$ is the GDP per capita for each state (i) at time (t); $Z_{it}$ is represented by control variables while $\varepsilon_{it}$ is the unobservable error term which is assumed to be uncorrelated with the other regressors. The basis for using a linear model is to investigate the direct relationship between economic growth and conflict. The coefficient of interest is $\beta_0$, which captures the effects of GDP growth on conflict. Previous macro-level studies on the economic impacts of conflict have in large part relied on pooled OLS estimation (Bozzoli et al., 2008). In this setting, however, the underlying assumption of independent and identically distributed errors $\varepsilon$ is likely to be violated. When factors that affect a society's economic outcomes and its vulnerability to conflict at the same time are omitted, OLS estimates are inconsistent. Cultural attitudes, for instance, are hard to measure, but potentially drive both growth and conflicts. Given the panel structure of the data, one way to deal with such unobserved heterogeneity is the introduction of state fixed effects (FE) to control for those state characteristics that do not change.

### 3.3.1.1 Estimation Strategy

It is relatively plausible that the key explanatory variables - current and lagged growth - are endogenous. Polachek and Sevastianova (2010) find that conflict reduces economic growth in both low-level and high-level income countries. Consequently, endogeneity could result from the fact that changes in economic growth in a state may be a result - rather than a cause - of

violence. Also, the expectation of violence could deter investment, thereby leading to lower growth. These results imply that investment decisions are frequently made on the basis of expectations of conflict.

***Negative Binomial Model***: As the dependent variable is an integer count with high variance and a high number of zeros, the regression analysis starts off with negative binomial model. A log-linear model is presented, which is a good approximation to the negative binomial model. However, with negative binomial model, the assumption is that the number of conflicts is a function of the exponential of the beta coefficients multiplied by the covariates $y_{it} \sim \exp(X_{it}\beta)$; with the log linear model, the assumption is that the log of the number of conflicts multiplied by the covariates, $\log y_{it} \sim X_{it}\beta$.

***Fixed Effects (FE) Estimation:*** There is the assumption that there will be unobserved cross-sectional heterogeneity across states; to control for this possibility, state fixed effects are added to the base specification using the log-linear model and estimated by ordinary least squares (OLS). Fixed effects and state effects have been added to impose time-independent effects for each state that is possibly correlated with the regressors and for variables that are time-invariant, so as to capture the characteristics of these variables to the specific state. This specification allows for examining the determinants of the intertemporal variation in the occurrence of conflicts. This is significant because while bivariate plots of the variation of growth and conflict may show that there is a relationship, this might be different when examining as a cross-section. Fixed effects have also been included to examine the concerns related to nationwide shocks, like the ethno-religious conflict in Jos in 2009 - which killed several Christians and destroyed lots of houses and schools - and the Kaduna riots in 2000.

Hausman test is carried out to determine the appropriate estimation method between the fixed and random effects.

***Instrumental Variable (IV) Estimation:*** Conflicts can cause major damage to physical property and loss of lives, thereby lowering economic growth. The aftermath of violence or expectations of violence may discourage investments and investors, leading to lower growth. Another reason for controlling for endogeneity is that changes in economic growth in a state may also be correlated with other omitted variables, such as weak community ties, lack of strong rule of law, or weak government, among many others. It is therefore necessary to account for potential reverse causality and omitted variables to avoid bias in our estimation of economic growth on conflicts. The dependent variable is modified by taking the log of the original values as follows: Log (0.1 + number of conflicts). 0.1 is added to avoid taking the log of 0, which is undefined, while rainfall is used as an instrument for growth.

***Panel Vector Autoregression:*** Time-series vector autoregression (VAR) models originated in the macro econometrics literature as an alternative to multivariate simultaneous equation models (Sims, 1980). With the introduction of VAR in panel data settings (Holtz-Eakin, Newey and Rosen, 1988), VAR models have been used in multiple applications across different fields. All variables in a VAR system are usually treated as endogenous, although identifying restrictions based on theoretical models or on statistical procedures may be imposed to separate the impact of exogenous shocks onto the system.

In VAR models, all variables are treated as endogenous and interdependent, both in a dynamic and in a static sense, although in some relevant cases, exogenous variables could be included (Ramey and Shapiro, 1998). A panel-data is used as another estimator for the analyses.

This method is used to test the robustness of the finding. A first order VAR model is specified as follows:

$$z_{it} = \Gamma_0 + \Gamma_1 z_{it-1} + f_i + d_{c,t} + e_t \tag{3.2}$$

where $z_{it}$ is either a three-variable vector (conflict, GDP, and conflict in adjacent states) or a four-variable vector (conflict, GDP, conflicts in adjacent states, and literacy rate). The dependent variable is conflict, while growth is the key explanatory variable. Literacy rate and conflict in adjacent states capture the effects these variables have on conflict if there is a shock to these variables. It is assumed that literacy rate can be endogenous and therefore added to the model with four-variables. The literacy rate in a country can affect the GDP and conflict levels in the economy.

In applying the VAR procedure to panel data, there is a need to impose the restriction that the underlying structure is the same for each cross-sectional unit. Since this constraint is likely to be violated in practice, one way to overcome the restriction on parameters is to allow for 'individual heterogeneity' in the levels of the variables by introducing fixed effects, denoted by $f_i$ in the model. The model above also allows for state-specific time dummies; $d_{s,t}$.

## 3.3.2 Variable definition and Sources

This study uses a panel dataset for 36 states and the Federal Capital Territory (FCT) in Nigeria from the period 1997 - 2013. The sample period of some control variables has been restricted to availability of data; country fixed effects are included in some specifications to capture time-invariant country-characteristics that may be related to conflict and growth.

**Dependent Variable**

*Number of conflicts:*

The dependent variable is the number of conflicts occurring in a particular state in a given year. The variable - **number of conflicts** - is calculated by the number of religiously and ethnic

motivated conflicts that occur in each state in a given year. Conflict data is sourced from ACLED database. The database consists of armed conflict for different countries from 1946 - present. The dataset codes locations, dates, and additional characteristics of individuals, battle events in states affected with wars, protests, or violent riots. The dataset also records one-sided violence on civilians by both government or rebel actors and conflicts between rebel groups. Conflict events are typically categorized into six major events - they are:

a) Riots/Protest;

b) Violence against civilians;

c) Non-violent transfer of territory;

d) Remote violence;

e) Violent interaction between military and rebel groups;

f) Non-violent activity by a conflict actor, this includes rallies, peace talks and peaceful protests.

The sixth category above was not used in the analysis due to its non-violent nature. Boko-Haram inspired conflicts have also been excluded from the sample for this chapter due to the large outlier.[28]

**Independent Variables**

*Growth:*

The independent variable of interest is Economic Growth; this is the annual growth rate of GDP per capita in a state. GDP data is from www.canback.com and is in constant 2005 prices.[29]

---

[28] Boko-Haram insurgencies have been taken out in order to study this in a different paper
[29] Canback Global Income Distribution Database (C-GIDD) is a database with comprehensive and detailed GDP and household income data for all countries in the world. The data is available both at the national and sub-national level.

*Rainfall:*

To account for the possibility of endogeneity, rainfall is used as an instrumental (IV) variable. The expectation of violence could deter investment, thereby leading to lower growth. Not taking the potential reverse causality issue could induce bias in the estimation of the effect of economic growth on conflict.

In the regression analysis, rainfall enters as a percentage change in rainfall as an instrument for growth and lagged percentage change in rainfall as an instrument for lagged growth. Miguel et al. (2004) reports that relative change in rainfall was a robust predictor of growth only for Sub-Saharan Africa, however, across Indian states, Bohlken and Sergenti (2010) find that it is the relative change in rainfall that is a predictor for growth. Data from rainfall took a lot of time to gather as Nigeria is a country with inadequate database. The rainfall data is extracted from KNMI climate report.[30] The data was downloaded by inputting the latitudes and longitudes of each Nigerian state to generate average daily rainfall in millimetres. This is then multiplied by the number of days in each year in the sample and for each state to get the yearly rainfall data for all states in Nigeria.

**Control Variables**

***Log of GDP per capita:*** The level of wealth in a state could influence not just the democratic stability - the occurrence of social unrest (Fearon and Laitin, 2003) - but also could affect the occurrence of ethnic conflicts (Harms and Zink, 2005). To control for this possibility, the variable *GDP per capita* is measured; this is the log of *GDP per capita* in a state at the beginning of the sample period. This variable also serves as a measure of the state capacity, which could influence growth rates and the occurrence of violence (Fearon and Laitin, 2003).

---

[30] KNMI climate change atlas is a website where climate data can be extracted by inputting longitude and latitude of a specific location (https://climexp.knmi.nl/)

This is also to control for the possibility that violence between groups is less likely in states with higher levels of socio-economic well-being. Bohlken and Seregenti (2010) find that their variable for level of wealth is not significant at the OLS estimation method, whereas growth has a negative effect on the occurrence of conflict.

*Literacy rate*: Literacy has been identified as an important instrument through which any country can attain development (Ladan et al., 2013). It is on this belief that government and people of Nigeria have taken the issue of how to increase literacy rates among children and adults as an important one. To account for the possibility that violence between groups is less likely in state where the majority of its citizens are literate or educated to the university level, included in the estimation are the level of literacy in a state using the percent literate rate in each state. Literacy data, which measures the percent of literate adults[31] and tertiary enrolment - comes from the 1991 and 2006 Census of Nigeria and is time-invariant.

*Population:* The state's population size is controlled for by including the variable Log (population). This accounts for the possibility that more populous states may be more likely to experience conflicts. Population data is sourced from the National Population Commission and from Canback Database for the 36 states in Nigeria, including the Federal Capital Territory (FCT).

*Number of conflicts (lagged):* Next, in order to capture the time dependence in the occurrence of conflicts, a lagged dependent variable − is taken into account. This variable is included mainly for technical reasons; it is likely to remove serial correlation in our residuals, which allows us to satisfy the conditional independence assumptions required for our estimation

---

[31] Literate adults are defined as citizens 15 years and above who can read and write

procedures. However, this variable could have a substantive interpretation as well. Conflicts may also follow previous conflicts, as each one strengthens existing fears and hatreds and creates new desires for revenge, leading to a vicious cycle of continual rioting (Posen, 1993). The limitation, however, is that the level of aggregation at which this variable is measured may not be appropriate for testing this hypothesis unless the conflicts tend to occur in the same towns within a state.

*Number of conflicts in adjacent states:* Following Bohlken and Sergenti (2010), the number of conflicts in adjacent states is included in the estimation to control for spatial dependence in the form of conflict spill-overs. This accounts for the total number conflicts in adjacent states during the same year.

### 3.3.3 Summary Statistics

Table 3.1 presents the summary statistics for all the variables that are employed in the analysis. The mean number of conflicts is 1.81 per state-year, with a standard deviation of roughly 5. As is the case with other datasets of violent events, our sample consists of many state-year observations where no events occurred. Regarding growth, from Table 3.1, we see that the mean growth rate is 0.038 with a standard deviation of 0.045 and growth rates range from 6% to 22%.

Table 3.2 presents the cross-sectional variation of conflicts and growth by state. The state with the highest mean number of conflicts is Lagos, with 11.529, and the states with the fewest are Kebbi and Gombe, with 0.118. With respect to growth rates, Ogun state had the highest rate of growth at 6.15% and Jigawa had the lowest at 0.74%. Lagos state has the highest mean number of conflicts with a relatively low average growth rate. On the other hand, Ogun is a state with a high average growth rate and relatively low mean number of conflicts. It

appears that for a given state, years characterised by higher growth rates *relative to the average growth rate* for that state, are characterised by fewer conflicts than years with relatively lower rates of growth.

**Table 3.1 Descriptive statistics (1997 - 2013)**

| Variable | Number of Observations | Mean | Std. Dev. | Min | Max |
|---|---|---|---|---|---|
| *Panel A: Conflicts* | | | | | |
| Number of conflicts | 629 | 1.812 | 4.345 | 0 | 53 |
| Lagged Number of conflicts | 628 | 1.81 | 4.359 | 0 | 53 |
| Log(0.1+ number of conflicts) | 629 | -0.860 | 1.716 | -2.303 | 3.972 |
| Lagged (Log(0.1+ number of conflicts) | 628 | -0.863 | 1.715 | -2.303 | 3.972 |
| Number of conflicts in adjacent states | 612 | 6.570 | 11.040 | 0 | 104 |
| *Panel B: Growth* | | | | | |
| Growth | 592 | 3.814 | 4.475 | -6.381 | 22.232 |
| Lagged Growth | 591 | 3.814 | 4.475 | -6.381 | 22.232 |
| Growth (log) | 628 | -0.00072 | 0.268 | -2.375 | 0.876 |
| Lagged Growth,(log) | 627 | -0.00076 | 0.268 | -2.375 | 0.876 |
| Log (population) | 629 | 15.06026 | 0.429 | 13.424 | 16.276 |
| *Panel C: Control Variables* | | | | | |
| Percent Literate | 629 | 61.183 | 19.667 | 16.82 | 95 |
| GDP per capita, 1997 | 629 | 22.076 | 0.698 | 20.896 | 24.159 |
| *Panel D: Rainfall* | | | | | |
| Rainfall | 628 | -0.00197 | 0.242 | -1.03834 | 1.7072 |
| Lagged Rainfall | 627 | -0.00153 | 0.242 | -1.03834 | 1.7072 |

**Table 3.2 Average number of conflicts and economic growth for all states in Nigeria (1997 - 2013).**

| State | Years | Average number of conflicts | Annual average growth (%) |
|---|---|---|---|
| Abia | 17 | 0.471 | 4.79 |
| Adamawa | 17 | 0.765 | 2.09 |
| Akwa Ibom | 17 | 1.000 | 4.79 |
| Anambra | 17 | 2.824 | 3.44 |
| Bauchi | 17 | 0.941 | 2.77 |
| Bayelsa | 17 | 2.000 | 3.44 |
| Benue | 17 | 1.176 | 3.44 |
| Borno | 17 | 0.412 | 3.78 |
| Cross River | 17 | 0.765 | 5.47 |
| Delta | 17 | 4.706 | 4.46 |
| Ebonyi | 17 | 0.353 | 4.12 |
| Edo | 17 | 2.706 | 4.79 |
| Ekiti | 17 | 1.294 | 2.77 |
| Enugu | 17 | 1.588 | 4.12 |
| Federal Capital Territory | 17 | 6.412 | 4.12 |
| Gombe | 17 | 0.118 | 2.77 |
| Imo | 17 | 1.765 | 4.79 |
| Jigawa | 17 | 0.353 | 0.74 |
| Kaduna | 17 | 3.353 | 4.79 |
| Kano | 17 | 2.118 | 4.12 |
| Katsina | 17 | 0.471 | 3.44 |
| Kebbi | 17 | 0.118 | 2.77 |
| Kogi | 17 | 0.706 | 1.42 |
| Kwara | 17 | 0.941 | 2.09 |
| Lagos | 17 | 11.529 | 2.09 |
| Nasarrawa | 17 | 0.941 | 3.1 |
| Niger | 17 | 0.588 | 2.77 |
| Ogun | 17 | 2.059 | 6.15 |
| Ondo | 17 | 1.588 | 3.44 |
| Osun | 17 | 1.941 | 4.79 |
| Oyo | 17 | 2.765 | 5.47 |
| Plateau | 17 | 2.941 | 3.1 |
| Rivers | 17 | 3.647 | 4.46 |
| Sokoto | 17 | 0.412 | 3.44 |
| Taraba | 17 | 0.824 | 3.44 |
| Yobe | 17 | 0.235 | 2.09 |
| Zamfara | 17 | 0.235 | 3.44 |

## 3.4 Results and Discussion

Results from the base specification are presented in Table 3.3. In the first column, all control variables are included in the estimation to capture the overall effect of the variables on conflict and economic growth. The coefficient estimate on growth is negative, -0.028, and not statistically significant. However, with the inclusion of state effects, the growth variable becomes statistically significant at 90% interval. On the contrary, adding the year fixed effects, there is a positive and significant effect of growth on number of conflicts. This suggests that, the estimations without year effects suffer from aggregated trend bias, but it is found that the sign changes to negative with lagged growth variables. It therefore shows that there is a time effect in growth reducing the incidence of conflicts in SSA.

All the control variables are significant. The lagged number of conflicts is positive and statistically significant at 99% confidence interval. Number of conflicts in adjacent states is also positive and significant. Hence, we find qualified support for both of the arguments that previous violence begets current violence and that violence may diffuse across state borders through contagion effects. These results also indicate that conflicts are more likely when groups are more evenly matched. With regard to the level of economic development, GDP per capita is significant at conventional levels and reduces the incidence of conflict. It can therefore be argued that growth appears to have a negative effect on the occurrence of conflicts. To control for unobserved cross-sectional heterogeneity across states, state fixed effects are added to the base specification. This specification takes into account the determinants of the intertemporal variation in the occurrence of conflicts. This is important because while bivariate plots of the variation of growth and conflicts over time in a state generally show a clear relationship between the two variables, this relationship is not observed in the cross-section analysis. Instead, the results are driven by the strong association between growth and conflicts that is observed within a state over time. In addition, the explanatory variables that are time-invariant

– percent literate and GDP per capita, 1997 – must be dropped. The results are presented in Table 3.3, Column 2. The coefficient estimate on Growth is significant at the 99% level and in the expected direction. Likewise, the estimate is not too far off to the estimate for the base specification. This indicates that much of the effect of growth can be attributed to its impact on the intertemporal variation in conflicts.

**Table 3.3 Economic growth and Conflicts**

| Explanatory Variable | Base (1) | With state fixed effects (2) | With state & year fixed effects (3) |
|---|---|---|---|
| *Dependent Variable: Number of Conflicts* | | | |
| Growth | -0.028 (0.021) | -0.029* (0.016) | 0.321** (0.138) |
| Lagged Growth | 0.006 (0.022) | -0.008 (0.015) | -0.269*** (0.061) |
| Lagged Number of conflicts | 0.148*** (0.027) | 0.039** (0.017) | -0.016 (0.021) |
| Number of conflicts in adjacent state | 0.038*** (0.010) | 0.029*** (0.008) | 0.014** (0.006) |
| Percent Literate | 0.018*** (0.004) | | |
| Log (population) | 0.625*** (0.159) | 4.511*** (1.326) | 0.182 (0.459) |
| GDP per capita, 1997 | -0.240** (0.117) | | |
| State fixed effects | No | Yes | Yes |
| Year fixed effects | No | No | Yes |
| Log Likelihood | -850.9 | -782.04 | -627.39 |

*Notes: Heteroskedastic-consistent standard errors are clustered by state in parentheses. Effects are significantly different from zero at 90% (*), 95% (**), 99% (***) confidence.*

Regarding the control variables, the variables lagged number of conflicts and number of conflicts in adjacent states remains positive and significant. Including state fixed effects, the value of the variables - except for log (population) - does not change much and the direction of each variable stays the same. Finally, to address concerns related to nationwide shocks, year fixed effects are added to the specification. As can be seen from Table 3.3, Column 3; the effect

of Growth changes substantially from the first two regression results. The coefficient enters with a positive sign. This suggests that the national shocks predict a higher level of conflict occurrence, with the coefficient estimate being statistically significant at 95% interval. The positive coefficient could also be as a result of potential endogeneity when state and year effects are included in the specification. The log of population remains positive, but insignificant, with the addition of year fixed effects. Collier (2006) argues that diversity can make a society safer because rebellion becomes more difficult. The coming together of any organisation is regarded as the formation of a little army, which faces problems of organisation cohesion and motivation. For any group to fight effectively, individuals must overcome their individual instincts to avoid danger and must take risks to help other members of the team. Nigeria as a country has diverse ethnicity. This could be advantageous in line with Collier's (2006) statement above.

## 3.4.1 Endogeneity Concerns

It is possible that our key explanatory variables – growth and lagged growth - are endogenous. First, conflicts can cause significant damage to physical property and thus lower economic growth. According to Newsom (2011), property damage to communities in the Niger-Delta area as a result of multiple conflicts has led to lower economic stability and growth in the region. Also, the expectation of violence could deter investment, thereby leading to lower growth. These results imply that investment decisions are frequently made on the basis of expectations of conflict. Furthermore, changes in economic growth in a state may be correlated with other omitted variables - such as weak civic associations and rule of law which could not be included in the analysis due to lack of data. Not taking the potential of reverse causality and omitted variables into account could also induce bias estimates of the effect of economic growth on conflicts. In order to deal with these potential problems, the specifications are

estimated using instrumental variables (IV). Given that the properties of IV estimation are best understood with a linear model, the dependent variable is altered by taking the log of the original values as follows: log (0.1 + number of conflicts).[32] This log-linear model serves as a good approximation to the negative binomial model. Table 3.4, Columns 1 and 2, shows the results for the base specification and for the specification with state and year fixed effects using the log-linear model, estimated by ordinary least squares (OLS).

The coefficient estimates for growth in both specifications are significantly different to the ones estimated with the negative binomial model, -.028 to -.501 and -.029 to -.250. These results explain that the log-linear model does provide a good linear approximation to the negative binomial model for our specifications. These estimations provide a better linear approximation for the IV specification. Percentage change in rainfall is our instrument for growth and the lagged percentage change in rainfall, for lagged growth.[33] The rest of the control variables are instruments for themselves.

In Table 3.4, Columns 3 and 4, presents the results of IV estimation of the log-linear model for both specifications. The results are almost identical to those from the OLS estimation of each specification. Except for lagged (number of conflicts), the coefficient estimate goes from -.023 to .80 significant at 90% confidence interval. With the random-effects estimator, we find coefficient estimates for growth similar to the OLS estimation.

---

[32] The addition of 0.1 is needed to avoid taking the log of 0, which is undefined.
[33] In Miguel, Satyanath and Sergenti (2004), the authors report that relative change in rainfall was a robust predictor of growth only for Sub-Saharan Africa.

**Table 3.4 Economic Growth and Conflicts**

| Explanatory Variable | OLS (1) | OLS with state & year fixed effects (2) | IV Base (3) | IV with state & year fixed effects (4) |
|---|---|---|---|---|
| | Dependent Variable: Log (0.1+ Number of conflicts) | | | |
| Growth | -0.501 | -0.250** | -0.577* | -0.019* |
| | (1.105) | (0.111) | (0.303) | (-0.01) |
| Lagged Growth | -0.691 | 0.203*** | -0.078 | -0.001 |
| | (1.105) | (0.05) | (0.094) | (0.012) |
| Lagged (Log (0.1 + Number of conflicts) | 0.285*** | -0.023 | 0.107 | 0.080* |
| | (0.058) | (0.049) | (0.117) | (0.042) |
| Number of conflicts in adjacent state | 0.039*** | 0.035*** | 0.040*** | 0.038*** |
| | (0.006) | (0.01) | (0.008) | (0.007) |
| Log (population) | 0.518* | 2.497*** | 1.216** | 3.350*** |
| | (0.281) | (0.567) | (0.48) | (0.469) |
| Percent Literate | 0.006 | | 0.033*** | |
| | (0.004) | | (0.011) | |
| GDP per capita, 1997 | 0.355** | | | |
| | (0.162) | | | |
| State fixed effects | No | Yes | No | Yes |
| Year fixed effects | No | Yes | No | Yes |

*Notes: Heteroskedastic-consistent standard errors are clustered by state in parentheses. Effects are significantly different from zero at 90% (*), 95% (**), 99% (***) confidence.*

## 3.4.2 Robustness Checks

The study tests for the robustness of results in different ways; the sensitivity of the results to alternative estimation method is analysed. First, rainfall specification of absolute value is replaced with relative monthly changes. Results obtained are somewhat different from the results in Table 3.4. The growth variable is positive and insignificant but lagged growth is negative and significant, showing there is a time period delay of growth reducing the incidence of conflict using rainfall as an instrument. The results in Table 3.5 also shows a significant difference in the size of the coefficients with and without year effects. Panel regressions which fail to control for year effects may pick up the influence of aggregate trends which have nothing to do with the causal relationships of the two variables. Year effects or year dummies capture the influence of aggregate (time-series) trends. Specifically, panel regressions which fail to

control for year effects - pick up the influence of aggregate trends which have nothing to do with causal relationships. In the Table 3.5, the first column does not include year effects and the estimate for growth is much lower than when year effects are included in the second column. This suggests that any omitted variable bias has been controlled for by adding year dummies therefore a considerably larger coefficient and significance in the estimates with year effects.

## 3.4.2.1 Panel Vector Autoregressive Estimation (PVAR)

To also control for endogeneity and further robustness checks in the specifications, we use the PVAR estimation to analyse the relationship between economic growth and conflict. All variables in a VAR system are typically treated as endogenous, although identifying restrictions based on theoretical models or on statistical procedures may be imposed to disentangle the impact of exogenous shocks onto the system. PVAR analysis is based on choosing the optimal lag order in both panel VAR specification and moment condition. The estimates are fitted by using a multivariate panel regression of each dependent variable on lags of itself, lags of all other dependent variables and exogenous variables, if any. Using a PVAR model, allows analysing the extent to which changes in economic growth impact on the number of conflicts. In addition, it also allows accessing the spill-over effect of conflicts in neighbouring states.

The estimation result is presented in Table 3.6. We find that lagged growth has a negative effect on conflict and significant at 99% interval. Lagged conflict also reduces growth at time t. The result shows a causal relationship between the two variables. Number of conflicts in adjacent states remains positive, but not statistically significant in the first column. The reverse relationship in column 3 shows a similar value with a significant effect. In other words, there is some spill-over effect on conflicts in neighbouring areas. Percent literate reduces the incidence of conflict. This follows the argument that the more people that are educated in a

country, the less there is the opportunity to carry arms or be involved in violence. This stems from the argument that educated citizens should be gainfully employed and also that the more people are educated, the higher the understanding of tolerance for other ethnicities and beliefs.

**Table 3.5 - Relative change in rainfall – Instrumental Variable**

| Explanatory Variable | *Dependent Variable: Log(0.1 + Number of conflicts)* | |
| | IV with state fixed effects | IV with state & year fixed effects |
| --- | --- | --- |
| Growth | 0.016 | 3.260* |
| | (0.07) | (1.846) |
| Lagged growth | -0.190*** | -1.370** |
| | (0.061) | (0.662) |
| Lagged (log (0.1 + Number of conflicts) | 0.114* | -0.066 |
| | (0.06) | (0.082) |
| Log (Population) | 4.683*** | 3.324 |
| | (0.663) | (2.69) |
| | | |
| State fixed effects | Yes | Yes |
| Year fixed effects | No | Yes |

*Notes: Heteroskedastic-consistent standard errors are clustered by state in parentheses. Effects are significantly different from zero at 90% (\*), 95% (\*\*), 99% (\*\*\*) confidence.*

**Table 3.6 - PVAR Results– Economic growth and conflicts**

| *Dependent Variable/* | *Conflict* | *Growth* | *Conflict in adjacent states* | *Literacy rate* |
| --- | --- | --- | --- | --- |
| *Explanatory Variable* | | | | |
| Lagged Conflict | 0.308*** | -0.004*** | 0.382** | -0.035 |
| | (0.111) | (0.001) | (0.165) | (0.046) |
| | | | | |
| Lagged Growth | -4.071*** | 0.146*** | -15.065*** | 3.233* |
| | (1.274) | (0.034) | (4.654) | (1.743) |
| | | | | |
| Lagged Conflict in adjacent states | 0.035 | -0.002*** | 0.220* | -0.081*** |
| | (0.027) | (0.001) | (0.114) | (0.029) |
| | | | | |
| Lagged Literacy rate | -0.098** | 0.001** | -0.633*** | 1.056*** |
| | (0.04) | (0.001) | (0.12) | (0.07) |

*Notes: Heteroskedastic-consistent standard errors are clustered by state in parentheses. Effects are significantly different from zero at 90% (\*), 95% (\*\*), 99% (\*\*\*) confidence. Growth is measured in log for all estimations on this table.*

## 3.5 Conclusion

This study finds support for evidence of economic growth proxy by change in GDP per capita reduces conflicts in Nigeria. The study investigates further by using rainfall as an instrument for economic growth to account for endogeneity in the growth variable. We find that economic growth explains a large portion of the intertemporal variation in the occurrence of conflicts and that growth has a statistically significant and substantively negative effect on the incidence of conflicts. Our results are robust to the inclusion of state fixed effects. Moreover, using annual changes in rainfall as an instrument for economic growth, we are able to show that our results are not driven by reverse causality or omitted variables, such as weakened civic associations or institutional changes.

Though there is clear evidence of a negative effect of economic growth on violence, the IV estimation also enters with a negative effect of economic growth on conflict, suggesting that rainfall shocks to economic growth reduces the incidence of conflict; there is no statistical support of higher levels of socio-economic well-being in the form of higher literacy rate reducing the occurrence of violence, except in the PVAR estimation where percentage of literates in each state reduces conflict. In addition to economic growth, our results demonstrate that past incidences of violence and conflicts in adjacent states are important factors in explaining the variation in conflicts in the country.

Three mechanisms were posited through which economic growth can influence the occurrence of conflicts: by leading governing elites to distract attention from adverse conditions, thereby fuelling a riot; by intensifying economic competition between ethnic groups; or by reducing the opportunity cost to potential participants. For the purpose of this study, the last mechanism is the main focus. More systematic research needs to be conducted to investigate the other two mechanisms whether either of these mechanisms can explain the link between economic growth and violence in Nigeria. By establishing that economic growth

reduces the occurrence of conflict at the state-level in Nigeria, this chapter gives rise to new questions which offer promising avenues for further research. The first of these is the validity of rainfall as a good instrument for economic growth. However, Sarsons (2015) suggests that rainfall is a plausible instrument if the country or region in question is economically dependent on rain-fed agriculture, as low levels of rainfall would result in crop failure thereby depressing rural income.

Further research could look at the ability of the judicial arm of the government in repressing violent conflicts – rule of law and political affiliations can be considered as mitigating factors in the incidence of conflict, as Nigeria is still plagued with sectoral distribution and religious affiliations to some political positions. The findings of this study have two main policy implications: first, the Nigerian government could identify more ways to grow the economy and equally distribute of the gains; second, policies to expand growth should be narrowed down to the agricultural and natural resources sector, favouring the rural areas so as to foster inclusion among the uneducated, as well as ethnic tolerance and cooperation.

# CHAPTER 4

# Effects of Conflict on State Capacity in Sub-Saharan Africa

## 4.1 Introduction

Sub-Saharan African countries have experienced some major conflicts – for example, the Boko Haram conflict in northern Nigeria, the Somalia civil war, and the civil conflict in South Sudan – in the last two decades that have resulted in humanitarian disasters, destruction of infrastructure, and breakdown of political authority. These conflicts have been attributed to political and economic factors (Taydas and Peksen, 2012). It is argued that political views are factors that create grievances and injustice, including deprivation and inequality, which may provide aggrieved groups with the motivation to use violent means against the state (Gurr, 1974; Regan and Norton, 2005). However, there is also the view that conflicts are not rooted in politics alone, but also in economic conditions such as poverty, inequality, and economic growth, to mention a few.

Furthermore, another view is that involvement in rebellion depends on the change in the expected payoff from the insurgency; special attention is thereby devoted in the same studies to the factors that affect the possibility of these rebellions (Tilly, 1978; Collier and Hoeffler, 2004; Regan and Norton, 2005). Despite the lack of consensus among researchers as to the major causes of conflict and its impact on the economy of the state, there is widespread consensus in the literature on the importance of state capacity in combatting conflicts (Buhaug, 2006; Benson and Kugler, 1998; Fearon and Laitin, 2003, Besley and Persson, 2010).

State capacity can be defined as the degree of control that state agents exercise over persons, activities and resources within their government's territorial jurisdiction (Ottervik, 2013). It is therefore critical for the performance of a political system. On the one hand, high capacity states are able to provide public goods such as human security, medical and health care, and the social and physical infrastructure that promote human development (Rotberg, 2003). On the other hand, low capacity states are limited in their ability to provide these goods, leading to low social trust (Rothstein and Stolle, 2008), low development levels, or even state failure (Skocpol, 1979). Likewise, for democracy to be consolidated and successful over time, a high capacity state is critical (Wang 2003; Fukuyama 2005; Carothers 2002). High capacity states are also typically characterised as states with a high share of taxes as a percentage of the GDP. The proceeds from these taxes are redistributed back to citizens or invested in public goods; the military strength of such states is also regarded as very high and there is a high degree of trust in politicians and in the functioning of political replacement mechanisms. This suggests that a country unable to provide basic economic functions or protect property rights may experience an increasing number of conflicts. However, conflicts can arise due to several other reasons which can then dampen state capacity in the country.

The extant literature has considered the effect of state capacity on conflicts (Besley and Persson, 2009; Di Guiseppe et al., 2012; Hegre and Sambanis, 2006; Sobek, 2010). However, there are limited studies on the impact of conflict on state capacity. Countries with high levels state capacity were found to experience fewer conflicts. While the incidence of conflicts in SSA has declined gradually since the early 1990s, the severity of the conflicts is still debatable (Gelbard et al., 2015). The general trend is toward peace and improved security, but disruptive threats have emerged in recent years as violent groups; some external to the countries affected have threatened economic and political stability in a number of countries, most notably in Mali, Central African Republic, Nigeria, South Sudan, and, on a more limited scale, in Kenya and

Mozambique. These security threats and conflict spill-over are increasingly impacting neighbouring countries. Largely, conflict and state capacity in SSA can be classified mainly into two categories: the first, and probably extreme, case is where rulers and their rivals see great benefits in the creation and maintenance of 'war economies' (Jackson, 2002). Many of Africa's conflicts are the direct result of deliberate and rationally-calculated strategies aimed at accumulating either power or wealth by the state and non-state elites. The second, and less extreme, category is that conflicts are sometimes as a result of risky strategies accepted by some African elites to hold on to power – predominantly in times of crisis – to establish supremacy or manage political demands. The indiscriminate use of state coercion on civilian populations, unleashing ethnic prejudice, or manipulating multiparty elections are all high-risk strategies that can lead directly to civil conflicts and war. There are other underlying factors – such as grievances, inequality, and greed – that may cause the onset of conflicts. These conflicts could disrupt state capacity building or minimise the extent to which the government invests in state capacity.

The consensus in the existing literature is that high levels of state capacity should reduce the incidence of conflict. It is, however, plausible that conflict disrupts state capacity and reduces the ability of a state to carry out the basic economic functions. This chapter seeks to examine this possibility by analysing Sub-Saharan countries. If a government invests in state capacity, the likelihood that public goods are destroyed as a result of internal struggles reduces incentives to invest more in state capacity. Cárdenas et al. (2013) also show that a similar result holds even when the persistence of state capacity building is taken into account. Investments in state capacity require the society's will to build a strong state, because tax revenue is necessary to invest in the state. Citizens are unlikely to support these efforts if they see the state as illegitimate, either because the state is unable to protect their property or personal security or because parts of the state have been captured by illegal forces. The ongoing interstate and

intrastate conflicts in SSA and the relatively-accurate measurement of conflict-related events offers an opportunity to investigate this unexplored dimension of the relationship between conflicts and state capacity in the region.

Earlier studies examine the effect of state capacity on conflict and found that the number of conflicts reduces with high levels of state capacity (Besley and Persson, 2010; Fearon and Laitin, 2003; Thies, 2010). A few other studies examine the effect of conflicts on state capacity, but – to the best of the researcher's knowledge – there is no present study on how conflicts impact state capacity in Sub-Saharan Africa (Besley and Persson, 2008; Cardenas et al., 2016). This chapter attempts to fill this gap in the literature. The possibility of any significant difference between the effects of internal (civil conflict) and external (interstate) conflicts on state capacity is also examined. Understanding the dynamics of the relationship between these variables could help policy makers in formulating policies. The empirical results show that conflicts have a negative correlation with state capacity if tax revenue is used as a proxy for state capacity, but is positively correlated with military expenditure.

It is possible that there are other indirect factors influencing the relationship between conflicts and state capacity – such as foreign aid, inequality, political stability, ethnic intolerance and freedom of speech – that could cause a positive or negative impact on state capacity. In dealing with conflicts and state capacity, the growth of the economy cannot be over emphasised. Theoretically, an economy with a relatively good growth should be able to invest more in state capacity and withstand the effects of conflict. However, it is possible for an economy to have increased growth and experience a lot more conflict, as the data suggests. The rest of the chapter is organised as follows: recent empirical research on the area is discussed in section 4.2, as well the gap in literature, research questions and research hypotheses; section 4.3 describes the data and methodology; empirical results are discussed in section 4.4; section 4.5 concludes.

## 4.2 Review of Relevant Literature

In the extant literature, the relationship between conflict and state capacity has been empirically analysed with other underlying factors such as wars, credit worthiness, liquidity, military spending, taxes, and welfare spending, to mention a few. The government of a country can strengthen the capacity of the state by increasing taxation if there is a potential external threat or internal conflicts. State capacity is also strengthened when the government needs to expand the markets through property rights. Stubbs (1999) claims that war – or the threat of war – has been an important factor in shaping state institutions in the most successful economies of East Asia (namely, Japan, Hong Kong, Malaysia, Thailand, South Korea and Singapore).

State capacity in any country is generally affected by violent conflicts. This is as a result of destruction of infrastructure, political instability, and high levels of unemployment. There is the possibility that public and private resources are used by incumbent and opposition government to maintain or gain control of the state. If this happens, the state is more likely to experience increased conflict. Other root causes of conflict – such as ethnicity, economic growth, political institutions, natural resource rents and climate – are subject to large theoretical and empirical literature in economics and political science (Blattman and Miguel, 2009; Sambanis, 2002). The majority of countries in SSA have been analysed as having either 'weak', 'failing' or 'ineffective capacity', that is, the countries lack the capacity to create environments in which security and markets can function (DiJohn, 2008). The emphasis on the limitation of states is somewhat explained by the political drivers of development, such as poverty reduction and strong political institution (Mkandawire, 2001; Olukoshi, 2007).

The data sample used in this chapter is concentrated with states regarded as developing by the World Bank, while the methodology follows closely the model developed by Besley and Persson (2009). The model assumes an incumbent government in a given country invests in

fiscal state capacity to develop the economy and to strengthen the nation's capacity to fight against external threats or external wars by investing in the military. Increasing the size and scope of the military is an expensive venture, both monetarily and politically. For a state to increase the size of its military, it must obtain new military hardware, increase the number of troops, and provide upkeep for both the weapons and personnel. Thus, the costs of increasing capacity are both immediate and, potentially, long-term. Strengthening the state's military during peaceful periods will often be difficult and politically unpopular. Building a military during an insurgency is also not likely to be a feasible option. Hence, conflict disrupts economic growth, and the increased taxation that is necessary to fund the military may itself provoke more support for insurgency within the population.

It is assumed that some form of protest occurs whenever there is a need for a change of government. This protest could be peacefully pursued – leading to peaceful transfer of power – or through a violent takeover.  If the incumbent government raises an army, this army is financed out of the public purse. The opposition can also raise an army which it uses to mount an insurgence to take over the government. The group in opposition is assumed to have means of taxing its own members (supporters of the opposition) in order to finance a private militia. Either the opposition wins and become the new incumbent or the incumbent wins and retains power; the probability of whichever group winning is dependent on the resources invested or devoted to the struggle for the power change. It is assumed that an opposition rules out the possibility of an undefended insurgency. While this is theoretically possible, such cases do not seem common in practice. For this assumption to hold, the incumbent uses the government budget to finance its army, while the opposition uses its private resources; the incumbent pays the real market wage to employ soldiers in its army. Therefore, the government may be more reluctant, all things being equal, to raise incomes by investing in legal capacity (or any other institutions to raise the wage).

If the incumbent government expects no opposition in the change of government, there is a higher likelihood of increased investment in fiscal and legal capacity. However, the probability that the incumbent stays in power is low and hence affects the political stability of the nation. This political instability influences the rate at which the government invests in state capacity. A government may, however, strive for investments in legal capacity to raise wages so as to generate peace. This is usually less common in weak states, because the government is not able to enforce the property and legal rights of its citizens. For a state that redistributes its resources, this may lead to competition for state control, as the new incumbent sees himself as a residual claimant on public resources. When this happens, conflict is more likely to occur, thereby impacting on the state capacity level of the country.

It is also assumed that the current government chooses the level of investment in fiscal and legal capacity, given the political institutions in place and potential risk of conflict if there were to be a change of control. In actual terms, fiscal capacity represents fiscal infrastructures such as a set of competent tax auditors, a good tax system; a strong institution necessary for collection of tax revenues at source or to impose value-added tax. A good tax system is expected to be fair and non-discriminatory. For a tax system to meet these requirements of fairness, it must be unbiased across economic activities; it must be visible for all citizens, that is, available for all to see that government revenue is being administered properly, especially in developing countries. A good tax system should also be easy for the government to administer and enforce and be inexpensive for taxpayers to comply with.

The income received from taxes is expected to be spent on expanding provision of public goods for citizens. High fiscal capacity is also believed to be beneficial to a country by eliminating costlier forms of redistribution; large governments yield higher production and national income than smaller governments. The key point is that redistribution using taxation is generally less costly than redistribution through distorting the allocation of market-

supporting policies. However, a government without sufficient fiscal capacity may choose legal protection in an inefficient method. Investments in legal infrastructures - such as building the courts systems, training and employing judges and law enforcement and market-supporting policies that raise private incomes – and provision of productive physical infrastructures - such as roads, ports and bridges and registering property or credit – are assumed not to depreciate in the model and are to be enjoyed by all without further payments by members of the society.

Nonetheless, whether the government decides to extend this protection to every citizen or just the supporters of the incumbent government is another policy decision. For the purpose of simplicity, it is assumed that every citizen enjoys the same rights, privileges and protections. A high legal capacity allows the government to support the private markets better. If it is assumed that the opposition government takes over with the probability $Y$, this parameter then becomes a rough measure of political instability.

Fearon and Laitin (2003) see conflict in developing countries as a reflection of limited capacity to put down rebellions by the weak states; Collier and Hoefffler (2004) see it as a reflection of lower opportunity costs of being unemployed. Weak states are more likely to experience internal conflict than strong states (Jackson, 2002). Weak states are characterised by a number of factors, and manifest as problems of legitimacy, unstable politics, social cleavages, lack of national identity, lack of state and institutional capacity, economic crisis, and external vulnerability to international actors.

Despite all these issues, a state can remain stable over a long period of time, but be prone to experience internal or external shocks, which can easily destabilize the state. In such states, the political elites could be dealing continuously with crisis management. When an opposition group wants to rebel, it is vital to consider the state's capacity to either repress the rebellion and capture the rebels, or whether the state has the capacity to accommodate the

group's demands through political and social institutions (Hendrix, 2010). However, highly authoritarian regimes are found to be the type of regime to have fewest internal conflicts (Hendrix, 2010). The argument for this is that the rebels view the repressive force of the state as high, and therefore the cost of rebellion is high. In democracies, one has an additional channel of organising through the political system; disputes can be solved in these institutions.

Mixed regimes (neither fully democratic nor autocratic) are thought to be the type of regime to experience the highest level of internal conflict, due to lack of enough repression-force and missing political institutional channels (Hendrix, 2010). However, a redistributive state tax system may lead to competition for state control as the winner of an election (if there was one) becomes a residual claimant on public resources. The theoretical model in this chapter highlights the key reason for state capacity building as the risk of external conflict. That is, it is essential for a country to be able to resist any external threat by equipping the military. But not all conflicts are external; internal conflicts plague many states, particularly in developing countries. State capacity building is also necessary for repressing internal conflict and for sustainable economic development.

A nation with low levels of fiscal and legal capacity may experience slow economic growth or more conflicts (Besley and Persson, 2010). Likewise, the onset, number, and intensity of conflicts may disrupt the capacity of the state. The causality between the two variables is unclear (Hameiri, 2007). Hameiri, argues that capacity is a dynamic power and reflects current socio-political relationships. Capacity can reside in different institutions and with different individuals at different points in time; this is shaped by class and ethnicity, which then form the institutions. Even if state capacity is improved with enhanced and more efficient policy implementation, conflict can be just as prominent in the society as before the changes occur. This is not the case for every state, but shows the unclear relationship between the two variables (Hameiri, 2007). Low state capacity - as a result of destruction of infrastructures and

low income - would result in less tax revenue income for the government. It could also be that persistent conflicts discourage government in investing in state capacity.

## 4.2.1 Research Questions

According to Ababu (2015), the practice of state building is known to dampen the onset, reduce the duration, and facilitate the resolution of conflicts.[34] He found evidence to suggest that strong state capacity increases the power of the state to address grievances, which could potentially reduce conflicts. However, Besley and Persson (2008) present a model that shows that internal conflicts wear down state capacity. Using data for a large cross-section of countries, the authors document a negative correlation between internal struggles and the capacity of the state several decades later. This, in effect, presents an argument for causality running in both directions. While both papers examine the effect of internal conflicts and state capacity in developing countries, this study seeks to bridge the gap in literature of the significant difference between internal and external conflicts on state capacity, looking at only SSA countries. A lot of work has been carried out on cross-countries across the globe and, to the best of the researcher's knowledge, no paper has specifically looked at Sub-Saharan African countries. This study also attempts to understand if either type of conflict (internal and external) has differing impact in sign and magnitude on how it affects state capacity. As a result, this study will attempt to find answers to the following question:

1. *Does conflict significantly affect the state capacity of Sub-Saharan African countries?*

   *1a. Which type of conflict (internal or external) has a more significant effect on state capacity?*

---

[34] State building is the ability of the state and the institutions of the state to effectively discharge its functions.

90

## 4.2.2 Research Hypotheses

It is argued that conflict corrodes the state's capacity; Besley and Persson (2008) develop a model that provides such a result. Using data for a large cross-section of countries, they find a negative correlation between internal conflicts and capacity of the state decades later. Cardenas, Eslava and Ramirez (2013) show a similar result that holds within countries even when the persistence of state capacity is taken into account. Centeno (2002) also argues that internal conflict deteriorates the capacity of a state, looking at the history of Latin American countries. Typically, many Sub-Saharan governments deal with weak state capacities which result from a number of factors, particularly, the high levels of conflict that occur in these states. The lack of capacity affects the ability of the states to provide basic services and the geographical control needed to repress conflict. Economic and political exclusion also create high variation in government services, where political representation and economic accommodation is lower for marginalised groups (Peet and Watts, 1996). Thus the question of taking up arms as a means of getting a share of the nation's wealth becomes critical for these groups. If the group decides to take up arms - either to protect what they already own or to take over from the current government - conflict occurs. This leads to the first hypothesis below:

*H1: Conflicts negatively impact state capacity in Sub-Saharan African countries.*

Leaders confronted by a progressive challenge to the state's territorial integrity are able to raise armies, create bureaucracies to manage the armies, and otherwise increase the depth of control on society by the regime. Our expectation of the increase in state capacity leads to an increase in the repressive capacity of the state, which we conceptualise as the ability for central governments to quash regime dissidents swiftly before the operationalised onset of civil war. If a group deliberately takes up arms to change the status quo within the economy, that is, when

one group attempts to make its situation better by deterring the other group - it is assumed that this group has concluded that the state is not capable of redistributing the wealth effectively or in a fair manner.  However, if a state is able to deter conflict and maintain peace by repressing conflict onset, enforcing contracts and property rights, and also providing a good economic wage, then the government might be able to maintain peace across the nation. This leads to the second hypothesis:

**H2:** *Potential internal or external threats increase capacity building and the ability of the state to repress potential rebel challenges to central authority.*


Corruption, lack of research and technology innovations, low morale, and legitimacy problems - coupled with shortage of (and outdated) equipment and technology - are among the reasons why Sub-Saharan countries are regarded as weak states. Some states fall on the borderline of strong and weak. For example, Botswana possesses some characteristics of a strong state, such as effective institutions and a strong economy (Jackson, 2002). A country that possesses relatively effective state institutions, a growing economy, and participatory politics is clearly closer to being a strong state than a country which lacks any of these characteristics. A contributing factor to developing strong states is argued in the literature as access to foreign credit and aid. DiGiuseppe, *et al.* (2012) argues that a state that is able to access international finance would have more resources to develop state capacity; this would otherwise not have been possible if there was no means of external finance. This leads to the third hypothesis:

**H3**: *Improved external finance to the state reduces its risk of conflict and increases state capacity.*

## 4.3 Data and Empirical Model

### 4.3.1 Data and Variable Definitions

As mentioned earlier, this chapter attempts to establish the effect of conflict on state capacity in SSA. It employs annual data from 2000 - 2015 for all variables used for 49 countries in Sub-Saharan Africa. The fiscal measures for state capacity variables are tax revenue as a percentage of the GDP and military expenditure as a percentage of the GDP. The legal variables are perception indexes of the quality of government in each country. State capacity variables were sourced from the World Bank Development Indicators. The main explanatory variable - *number of conflict* - measures the number of reported conflicts in the country in a given year. This data comes from ACLED and UCDP/PRIO Armed Conflict Dataset. The control variables are also sourced from World Bank Development Indicators, except for the polity variable, which is from Centre for Systemic Peace.

*Dependent Variables*

State capacity is defined as the "degree of control that state agents exercise over persons, activities, and resources within their government's territorial jurisdiction" (McAdam, Tarrow and Tilly, 2001). State capacity is critical for the performance of a political system and the nation's development. High capacity states are able to provide public goods such as human security, medical and health care, and the social and physical infrastructure that promote human development (Rotberg, 2003); low capacity states are limited in their ability to provide these goods, leading to low social trust (Rothstein and Stolle, 2008) low development levels, or even state failure (Rotberg 2004; Skocpol 1979). For democracy to be consolidated and successful over time, a high capacity state is critical (Carothers, 2002; Diamond, 2000; Fukuyama, 2005; Wang, 2003).

A common methodology in measuring the capacity of a state is to look at the amount of taxes it collects (Besley and Persson, 2008; Fukuyama, 2013: Lieberman, 2002). This approach has its merit. Wang and Hu (2001) argue that the state's capacity to mobilise and extract financial resources is the core of state capacity building and the foundation of the state's ability to realise its other capacities. Along the same line, Schumpeter also notably argues that "public finances are one of the best starting points for an investigation of society, especially though not exclusively of its political life" (Schumpeter, 1991). Though measuring state capacity by taxation as a percentage of the economy is perhaps the most straightforward approach, it nevertheless has several caveats (Fukuyama, 2013); first, it measures not only the capacity to tax, but also the willingness. The ability to collect taxes increases a state's degrees of institutionalisation, bureaucratic organisation, and perceived legitimacy. The criticism to this approach is that a large government is not necessarily a capable government. A small government could be more efficient than a large one; even if the state has the ability to collect taxes, the issue of corruption, trust and transparency would also affect the way in which these tax revenues are allocated.

In this chapter, state capacity is measured in two distinct ways: f*iscal* and *legal* capacity. The fiscal capacity variables consist of, t*otal tax revenue as a percentage of GDP* as used in a number of articles (Campbell, 1993; Chaudhry, 1997; Cheibub, 1998; Fauvelle-Aymar, 1999; Centeno, 2002; Thies, 2010) and *military expenditure as a percentage of GDP* (Hendrix, 2010). The second measure of state capacity is legal capacity, which includes a combination of measures; *Rule of Law, Regulatory Quality, and Government Effectiveness* (Hegre et al., 2001; Marshall and Jaggers, 2009).

***Rule of Law*** - A dimension of the rule of law shown to affect state capacity is the awareness and respect of property rights, particularly intellectual property (Hansen et al., 2009). Rule of law measures the extent to which agents have confidence in and abide by the rules of society,

in particular the quality of contract enforcement, the police, and the courts, as well as the likelihood of crime and violence. The state's ability to govern on the basis of legitimate public norms and institutions is a strong indicator of the likelihood of long-term political and economic stability. This variable is measured as property rights and rule-based governance, with -2.5 as the lowest estimate a country can achieve and 2.5 as the highest. Gould and Gruben (2001), utilising a cross country data on patent protection, trade regime and country specific characteristics, providing evidence that suggests that property protection is a significant determinant of economic development.

*Regulatory Quality* - Regulatory Quality can have different interpretations, depending on the institutional and administrative context in which it is used (Radaelli and De Francesco, 2007). In this chapter, regulatory quality is explained as the perception of the ability of government to formulate and execute sound policies and regulations that permit and promote private sector development. The world average for the variable is zero (0); a country with a value above the average is said to be doing very well in terms of regulatory quality, while a country below zero is doing very badly. Most African countries have a value below the world average.

*Government Effectiveness* - Government effectiveness reflects: perceptions of the quality of public services; the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation; and the credibility of the government's commitment to such policies. It is suggested that countries with high government effectiveness are generally also strong economic performers. Also, Government effectiveness is among the most direct measures available of the strength and quality of state institutions, which are essential for the provision of public goods and the formulation and implementation of sound policies. It is assumed that high levels of conflict may disrupt the ability of government to provide quality services and implement sound policies. These legal measures allow us to capture the quality and effectiveness of state institutions, as well as the

government's legitimacy and accountability to its citizens, which explains the capacity of the state.

*Explanatory Variable*

**Conflicts** are complex phenomena that rarely consist merely of a military struggle between the state and one rebel group. Therefore, external and internal conflicts can be understood as a condition that provides an opportunity to address unresolved issues within a larger conflict context. Internal conflicts transform societies into anarchies, with a breakdown of political order and lawlessness of which violence tends to be a predictable outcome (Kalyvas, 2007). The variable conflict is measured as the number of conflicts that occur in a particular year in each country in the sample.

The number of conflicts is disaggregated into external and internal conflicts; this is to capture which type of conflict impacts more on state capacity. Internal conflicts are defined as conflicts that occur between the government of a state and internal opposition groups, without intervention from other states. External conflicts, on the other hand, are those that involve two or more independent states inclusive of wars.

This study uses the data from Armed Conflict Location and Event Data Project (ACLED) and Armed Conflict Data database recently developed by the International Peace Research Institute of Oslo, Norway, and the University of Uppsala, Sweden (referred to as PRIO/Uppsala). The ACLED data consists of disaggregated conflict analysis and crisis mapping. The database consists of armed conflict for different countries from 1997 - present. The dataset codes locations, dates and additional characteristics of individuals, battle events in states affected with wars, protests, or violent riots.

The Armed Conflict database also uniquely records all conflicts with a threshold of 25 battle deaths per year, in addition to classifying conflicts by the standard 1,000-death threshold,

thus including more small conflicts in the analysis. An armed conflict is defined in the PRIO/Uppsala database as "a contested incompatibility which concerns government and/or territory where the use of armed force between two parties, of which at least one is the government of a state, results in at least 25 battle-related deaths." It is possible that the analysis has some limitations. This may arise as a result of the definition of 'conflict'. The conflict definition may mean that some types of organised violence that do not directly affect the state are not captured; for instance, clashes among pastoralist groups in northern Kenya or crime related to the drug trade in Lagos, Nigeria—which are of considerable research interest in their own right – might not be captured. This study also does not focus on ethnic violence, which may be the underlying cause(s) of internal conflicts in the region.

*Control Variables*

*GDP per capita* - The natural log of GDP per capita is included to account for the assertion that countries with high levels of economic development are less likely to experience domestic violence (Barbieri and Reuvney, 2005; Fearon and Laitin, 2003; Gleditsch, 2002). GDP per capita is the most common indicator of a state's resources or economic wealth. Arguably, a state with high levels of GDP should not experience high numbers of conflict because it is assumed that citizens have an adequate standard of living, which fosters peace. Fearon and Laitin (2003) characterise armed rebellion to a set of structural conditions that reduce the opportunity costs of uprising, thereby increasing its likelihood. Specifically, they find that low economic development (proxied by GDP per capita, GDPpc) significantly increases the probability of civil war, thereby reducing the state capacity. The dependent variables (in particular the fiscal ones) can be affected by global phenomena such as economic crises; this is controlled for by including year effects. Likewise, the amount of tax revenue received is

dependent on income levels. Generally, state capacity is a function of a county's level of development; this is likely to be more visible in the long run than within-country inconsistency.

*Population* - The log of total population is used to control for the expected positive association between higher population rates and the likelihood of conflicts. In order for the state to accomplish anything, they must satisfy their resource demands; moreover, taxation requires the state to invest in the capacity to monitor its population and effectively threaten them with non-payment. According to Hendrix (2010), a state can also build its military capacity if the population is relatively high implying that more people can sign up to join the military. Population could either positively or negatively affect state capacity. If the government utilises the large population to its advantage by equipping and educating its citizens, it is possible for state capacity to increase. However, a state that is prone to conflict and increased population will reduce the state capacity. Also, the number of people below the poverty line may increase the likelihood of conflict arising; if this number is high; state capacity would be negatively affected.

*Foreign Aid (Net ODA received (constant US$)* - Access to foreign capital directly increases a state's economic capacity by providing it with resources that it would not otherwise have at its disposal if it relied solely on domestic revenue sources. Fjelde and de Soysa (2009), argue that the ability of the state to 'outspend' potential challengers on public goods significantly reduces the probability of conflict by alleviating some of the economic woes that might otherwise motivate the aggrieved to take up arms against the state. This study will also attempt to test the effect of external support on state capacity - especially repressive capacity - through US Greenbook data. The natural log of total economic aid and total military aid from the United States - as marked in constant 2011 US Dollars - is included. The credit made available to some governments has increased the stock of resources they can utilise, while at the same time

constraining governments to the demands of creditors and increasing their exposure to the volatility of international business cycles (Wibbels, 2006).

*Political instability (Polity Index)* - To control for the impact of regime type on state capacity, this study uses the polity index; this index assesses the impact of different regimes on state capacity. Typically, democracies and dictatorships are less immune to civil conflict than anocracies or semi-democracies. The polity score variable combines the scores on the democracy and autocracy indices to a single regime indicator. The score captures the regime authority spectrum on a 21-point scale ranging from -10 (strongly autocratic) to +10 (strongly democratic). It has also been shown that inclusive political institutions are fundamental to building state capacity (Besley and Persson, 2009; Cárdenas and Tuzemen, 2010). Therefore, country effects and lagged dependent variables will be included in our specifications. It is expected that the higher the level of democracy, investment in state capacity should increase because of the stability of government. The government might also be inclined to foster peace in the nation, thereby creating public goods and property rights enforcement laws. The polity2 variable is expected to be positive in the model. The data was collected from Centre for Systemic Peace and Societal-Systems Research Institute.

## 4.3.2 Summary Statistics

The descriptive statistics for the variables are presented in Table 4.1. The average tax revenue is about 15.9% indicating that revenue from tax is a small percentage in the overall GDP from the sample. This is relatively low, as most countries average 16% to 45% (World Bank Data, 2016). On average, military expenditure as a percentage of GDP is about 2%; this seems to

also be the world average.[35] Rule of law, regulatory quality and government effectiveness are governance indicators, which proxy the legal capacity dimension of state capacity. The world average of all indices for the base year is 0, hence a positive value of the index in any country suggests that the country's performance is above the world average. Thus, higher values suggest a higher regard for the rule of law, better regulatory environment, and an effective government. The means of these variables are all negative, indicating that the quality of legal capacity in SSA is substantially below the world average. The conflict variable has an average of about 3, suggesting conflicts occur rather frequently in the region. The Centre for Systemic Peace analyses the global conflict trend from 1946 - 2016. The institute finds that from the mid-2000s there has been an increasing level of conflict. Most of the increase has been in Muslim countries concentrated in the North Africa and Middle East (MENA) region. This seems to be consistent with the conflict trend in SSA.

---

[35] An overview of the world's military expenditure as a percentage of GDP shows an average of 2% to 4%. There are however outliers in the earlier years.

**Table 4.1 - Descriptive Statistics**

| Variable | Obs. | Mean | Standard Deviation | Min | Max |
|---|---|---|---|---|---|
| ***Panel A -Dependent Variable:*** | | | | | |
| Tax Revenue (% of GDP) | 411 | 15.91 | 8.707 | 0.231 | 58.28 |
| Military Expenditure (% of GDP) | 673 | 2.040 | 2.262 | 0.146 | 32.66 |
| Rule of Law | 695 | -0.692 | 0.625 | -2.114 | 1.057 |
| Regulatory Quality | 695 | -0.663 | 0.597 | -2.261 | 1.123 |
| Government Effectiveness | 695 | -0.734 | 0.594 | -2.171 | 1.036 |
| ***Panel B -Explanatory Variable:*** | | | | | |
| Log(Number of Conflicts) | 704 | 3.25 | 1.83 | 0 | 8.05 |
| Log(internal conflicts) | 703 | 3.21 | 1.84 | 0 | 8.05 |
| Log(external conflicts) | 247 | 1.37 | 1.34 | 0 | 5.08 |
| ***Panel C -Control Variables:*** | | | | | |
| Log(GDP per capita) | 735 | 6.981 | 1.079 | 5.268 | 9.912 |
| Log(population) | 748 | 15.731 | 1.580 | 11.303 | 19.008 |
| Population (annual growth) | 748 | 2.504 | 0.877 | -2.629 | 5.598 |
| Net ODA, (constant 2013) | 692 | 19.70 | 1.351 | 13.25 | 23.26 |
| Polity2 - Political Instability | 705 | 1.905 | 5.187 | -9 | 10 |

Table 4.1 above shows the descriptive statistics of the variables estimated in our model for the period 2000 - 2015 for 47 countries. * Refer to Section 4.3.1 for variable explanations and measurements.

## 4.3.3 Estimated Empirical Model

This chapter uses two key regression specifications to study the relationship between state capacity and conflict. The conflict literature typically treats state capacity (commonly proxied by economic growth) and state capacity as exogenous; however, a few researchers treat income as endogenous (Hendrix 2010; Miguel et al., 2004), but the dynamic consequences of conflict are likely to be as important. McBride et al. (2011) develop a model in which state capacity is treated exogenously, suggesting that states with low capacity where conflict is not very destructive should experience more conflict. Their model introduces a channel through which income (state capacity) reduces the likelihood of conflict. When state capacity is treated endogenously, their model demonstrates that investments in state capacity can bring out peace in the state.

Cardenas et al. (2010) find that conflict in developing countries disrupts state capacity, hindering economic development. With high state capacity, there would be a significant correlation between early conflicts and current capacity in the data unless initial conditions are controlled for. In order to allow for easy comparability, an OLS methodology is used as the baseline estimation, not controlling for fixed effects and also not taking into account the potential persistent nature of state capacity. The basic regression equation is as follows:

$$SC_{it} = \beta_0 + \beta_1 C_{it} + \gamma^{'} X_{it} + \psi^{'} D_t + \mu \qquad\qquad (4.1)$$

where $SC_{it}$ measures state capacity in country $i$ in year $t$; $C_{it}$ is the total number of conflicts in country $i$ in year $t$. The conflict variable is a combination of both internal and external conflicts. $X_{it}$ consist of the control variables: GDP per capita (in logs), population, polity (a measure of political stability), and Net ODA. $D_t$ is a composite of variables representing year and country effects. The conflict variable is disaggregated into external and internal conflicts. As Besley and Persson (2008) argue — theoretically and empirically — the two forms of conflict may

have opposite effects on the incentives to invest in state capacity. The estimated model then becomes:

$$SC_{it} = \beta_0 + \alpha_1 IC_{it} + \alpha_2 EC_{it} + \eta' X_{it} + \phi' D_t + \mu \qquad (4.2)$$

where $IC_{it}$ measures internal conflict and $EC_{it}$ measures external conflict. Other variables remain the same. To take into account the possible effects of initial conditions, the level of development in the country, other sources of unobserved time-invariant heterogeneity, and persistence nature of state capacity, the dynamic panel model is used to estimate the models. The GMM estimator is also used to control for country-specific effects, which cannot be done with country-specific dummies, due to the dynamic structure of the regression equation. Also, the estimates for $\beta_0, \beta_1$, $\alpha_1$ and $\alpha_2$ could be biased due to various reasons; they may exhibit measurement error, omitted variable bias, or reverse causation. A suitable estimation method is therefore needed to obtain unbiased, efficient, and consistent estimates. The dynamic panel model takes the following form:

$$SC_{it} = \beta_0 + \delta_i SC_{it-1} + \beta_1 C_{it} + \gamma' X_{it} + \psi' D_t + \varepsilon_{it} \qquad (4.3)$$

$$SC_{it} = \beta_0 + \delta_i SC_{it-1} + \alpha_1 IC_{it} + \alpha_2 EC_{it} + \gamma' X_{it} + \psi' D_t + \varepsilon_{it} \qquad (4.4)$$

where $SC_{it-1}$ is the lagged dependent variable; $X_{it}$ is the same vector of controls as in equation (4.3)

$$\varepsilon_{it} = \mu_{it} + \upsilon_{it} \qquad (4.5)$$

and

$$E[\mu_i] = E[\upsilon_i] = E[\mu_i \upsilon_i] = 0 \qquad\qquad (4.6)$$

$\mu_i$ are country fixed effects and $\upsilon_{it}$ are idiosyncratic shocks. Equation (4.3) is subject to problems of endogeneity for lagged dependent variables, which is standard in dynamic panel data models (Arellano and Bond, 1991; Blundell and Bond, 1998). Both state capacity and the probability of conflict may be affected by external shocks that are unobserved (e.g. political reforms, climate). The issue of reverse causality is a clear possibility that could present additional endogeneity problems directly related to our variables of interest. To address these problems, the System GMM estimator is employed. Arellano and Bover's (1995) System GMM method makes it possible to take into account simultaneity bias and inverse causality by using the lagged dependant variables as instruments. The original GMM estimator (Arellano and Bond, 1991) yields inefficient estimates, because lagged levels are poor instruments for first–difference equations. In contrast, the system GMM estimator eliminates this problem by using the lagged levels as instruments for first difference equations and the lagged first differences as instruments for level equations.

The system GMM estimator - developed by Arellano and Bower (1995) - combines a regression in differences with one in levels. Blundell and Bond (1998) state evidence from a study in Monte Carlo that the inclusion of the level regression in the estimation reduces the potential bias in finite samples and the asymptotic inaccuracy associated with the difference estimator. The consistency of the GMM estimators depends on the validity of the instruments and the assumption that the error term is not serially correlated. The first test is the autoregressive (AR) test, which examines the hypothesis that the error term is not serially correlated in both the difference regression and the system difference-level regression. The second test is either the Sargan or Hansen test of over-identifying restrictions, which tests the overall validity of instruments by analysing the sample analog of the moment conditions used

in the estimation process. To check the validity of instruments used in the estimation of the equations above, I perform the Hansen test of over-identifying restrictions introduced by Arellano and Bond (1991) and Arellano and Bover (1995).

## 4.4 Estimation Results

### 4.4.1 State Capacity and Conflict

Table 4.2 and 4.3 present the baseline specification result using OLS estimation method of state capacity and conflict. State capacity is the dependent variable while the number of conflicts is the explanatory variable. Table 4.2 presents the fiscal capacity results, while Table 4.3 presents the legal capacity option. The baseline specification explores the initial conditions of the two variables without controlling for fixed effects or the persistence of state capacity, but takes into account year effects. Year effects have been included to the model to control for omitted variable bias and to avoid aggregate rising trends influencing cross-country regressions.

The results show a strong negative correlation between conflicts and tax revenue as a percentage of GDP. An increase in conflict reduces the amount of tax revenue contributions to the GDP of SSA countries. This submits that increased levels of conflict disrupt the ability of the government to ensure revenue from tax is maintained. It could also be that citizens are rebelling against the current government and not willing to pay their taxes; this situation is often common among African countries with inadequate tax collection organisations or in those without robust revenue collection system. However, using military expenditure as the state capacity measure shows a positive relationship with the number of conflicts. This relationship is intuitive, as the increase in number of conflicts may cause increase in military expenditure if the government attempts to curb conflict growth by investing more in the military.

The strength and size of the military can be seen as the most important element in a state's repressive capabilities, specifically, how this affects the onset and termination of civil conflict (Hendrix, 2010). Buhaug (2010) also finds that larger militaries are associated with lower risk of conflict onset and shorter war duration, while Fearon and Laitin (2003) stress the importance of a state's repressive capacity and the prospects of civil conflict is dependent on the government's military capabilities and the reach of government institutions into rural areas. The control variables for both tables (fiscal and legal capacity) indicate a negative relationship with state capacity, except for the polity variable, which is positive and significant.

Table 4.3 below presents the empirical analysis of the legal capacity variables and number of conflicts. There is a negative correlation between conflict and legal capacity; indicating that an increase in the number of conflicts reduces the capacity of the state to ensure property rights and rule-based laws are adhered to in the county. Fearon and Laitin (2003) argue that conflicts that limit state capacity usually occur in poor countries or countries that do not have ability to repress rebellion. Besley and Persson (2009) see the negative relationship of these variables in two ways: either the government does not want to invest in state capacity, due to disruptions to established laws and resource rents in the country; or these conflicts are aggravated as a result of people feeling marginalised, and through property rights not been protected by the government.

**Table 4.2 – State Capacity (Fiscal Capacity) and Conflict (2000 - 2015) – OLS Estimation**

| | Tax Revenue | | Military Expenditure | |
|---|---|---|---|---|
| Variables | ( 1) | (2) | (1) | (2) |
| Log (number of conflicts) | -0.558** | -0.567** | 0.134*** | 0.112*** |
| | (0.259) | (0.264) | (0.041) | (0.041) |
| Log (GDP per capita) | -0.958** | | 0.055 | |
| | (0.370) | | (0.067) | |
| Annual GDP growth | | 0.065 | | -0.035*** |
| | | (0.080) | | (0.012) |
| Population, growth rate | -6.032*** | -5.899*** | 0.241*** | 0.238*** |
| | (0.583) | (0.585) | (0.084) | (0.079) |
| Net ODA (constant 2013) | -1.341*** | -1.111** | -0.347*** | -0.317*** |
| | (0.475) | (0.48) | (0.066) | (0.065) |
| Polity2 | 0.365*** | 0.349*** | 0.007 | 0.007 |
| | (0.075) | (0.075) | (0.012) | (0.012) |
| Constant | 65.939*** | 54.252*** | 7.490*** | 7.544*** |
| | 9.228 | 8.573 | 1.433 | 1.139 |
| Observations | 369 | 374 | 585 | 585 |

Notes: ***, ** and * indicate statistical significance at 1%, 5% and 10% respectively. Standard errors in parenthesis.

**Table 4.3 – State Capacity (Legal Capacity) and Conflict (2000 - 2015) – OLS Estimation**

| Variable | Regulatory Quality | | Rule of Law | | Government Effectiveness | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Log (number of conflicts) | -0.090*** | -0.090*** | -0.142*** | -0.141*** | -0.087*** | -0.087*** |
| | (0.015) | (0.016) | (0.015) | (0.016) | (0.013) | (0.015) |
| Log(GDP per capita) | 0.242*** | | 0.201*** | | 0.231*** | |
| | (0.023) | | (0.023) | | (0.021) | |
| Annual GDP growth | | 0.011** | | 0.011** | | 0.011*** |
| | | (0.004) | | (0.004) | | (0.004) |
| Population, growth | -0.185*** | -0.295*** | -0.238*** | -0.332*** | -0.283*** | -0.390*** |
| | (0.029) | (0.031) | (0.030) | (0.031) | (0.027) | (0.029) |
| Net ODA(Const. 2013) | 0.193*** | 0.115*** | 0.196*** | 0.130*** | 0.233*** | 0.158*** |
| | (0.023) | (0.025) | (0.024) | (0.024) | (0.021) | (0.023) |
| Polity2 | 0.030*** | 0.030*** | 0.021*** | 0.021*** | 0.021*** | 0.020*** |
| | (0.004) | (0.005) | (0.004) | (0.005) | (0.004) | (0.004) |
| Constant | -5.396*** | -2.049*** | -4.948*** | -2.153*** | -6.043*** | -2.690*** |
| | (0.513) | (0.444) | (0.519) | (0.437) | (0.467) | (0.407) |
| Observations | 579 | 579 | 579 | 579 | 579 | 579 |

*Notes: ***, ** and * indicate statistical significance at 1%, 5% and 10% respectively. Standard errors in parenthesis.*

GDP per capita as a control variable is positive and significantly affects the legal capacity dependent variables. This shows that an increase in GDP improves the state's ability to increase the quality of government. A strong state capacity is essential for economic growth/development. Likewise, economic development is crucial for building state capacity. The results obtained suggest that increase in GDP increases legal capacity of the nation. Lucas (1993) argues that nations able to lay claim of economic divergence - based on differential patterns of learning-by-doing and human capital accumulation related to openness - will have a higher economic development and consequently strong state capacity. Countries able to

enforce law and order, regulate economic activity, and provide public goods build stronger state capacity; however, many states in Africa often lack the ability to build strong states. Net ODA and Polity2 also increase the level of legal capacity in the country. However, population enters with a negative sign and significant for all regression models except in Table 4.2, where military expenditure as a percentage of GDP is the dependent variable. This is plausible because increased population may result in the breakdown of law and order if the state is not able to provide adequate jobs for those seeking employment (Birdsall and Griffin, 1993).

Economists also believe that population growth not only affects people, but also institutions and their capacity to deal with rapid social and ecological change. The data also suggests that population growth does not move in the same direction as the tax revenue, supporting the theory that Sub-Saharan African countries - except for Mauritania - may have insufficient tax systems. The most fundamental institutions - which are markets, law, property rights - evolved with human culture; others - finance system, transportation, formal education, public health systems, and international trade, to mention a few - were developed as products of state policies and reforms (Young, 1993).

These institutions are expected to regulate how resources, goods, services and opportunities reach people and critically, which people they reach. When institutions function well, they can impart flexibility to an economy and transmit widespread benefits. However, it is suggested that for institutions to adequately adjust to population growth, countries must have a broad array of functional modern institutions (Cincotta and Engelman, 1997). It is believed that institutions that function smoothly make it possible for some of the initial adverse effects of population growth to be reversed in the long run; when institutions function poorly, the likely economic risks of population growth would be depressed levels of output per worker, failure to meet society's goals for allocating goods and services, and stagnation or deterioration of assets. These usually occur in poor countries or countries where institutions have yet to reach

maturity. Regardless of national income, population growth can degrade renewable natural assets where property rights are inadequate or non-existent. These results should be taken with caution, as they may be driven by exclusion of initial state capacity conditions. These conditions are potential determinants of both concurrent existence of state capacity and the probability that a country initially entered a conflict.

Tables 4.4 and 4.5 present the results of the GMM estimation method. The results obtained are similar to the OLS estimation. In the GMM results, the polity variable changes sign from being positive in the OLS estimation to negative in the GMM estimation method. The GMM results are superior to the OLS as it takes into account omitted variable bias, it therefore explains that in SSA countries, high level of democracy do not increase the capacity of the state. This is expected as most countries suffer from high corruption levels, bureaucratic and inefficient governments – which then impacts on the capacity of the state to collect taxes. Also, in Table 4.4, conflict remains negatively correlated with tax revenue, but only significant in the second model. Likewise, conflict is positively correlated with military expenditure. GDP per capita is also positive and statistically significant in all models except for Model 1. The results are therefore robust to a different estimation method, suggesting that higher levels of conflict hinder the capacity of a state to collect taxes and invariably reduces the capacity of the state. However, a different conclusion is drawn when military capacity is the proxy for state capacity. It appears higher numbers of conflict spur investment in the military thereby strengthening the military capacity of the state.

The level of economic growth is also essential for building a strong state. GDP per capita is positive and statistically significant. It is interesting to note that foreign aid negatively affects fiscal state capacity, while a positive relationship is obtained with legal state capacity. It might be assumed that a country that receives more aid would be able to build up both forms of capacity due to extra source of revenue; this however is not the case for fiscal capacity

110

variables. This result suggests that the impact of foreign aid is mainly towards legal capacity. It is plausible to assume that aid given to countries reduces the ability of these countries to enforce taxes, most especially with countries with weak tax organisations. Savun and Hays (2011) find that foreign aid is unlikely to reduce terrorism and state building. Similarly, aids extended to corrupt governments increases the supply of large-scale conflicts.

**Table 4.4 – State (Fiscal) Capacity and Conflict (2000-2015) - GMM Estimation**

| Variables | Tax Revenue | Tax Revenue | Military Exp. | Military Exp. |
|---|---|---|---|---|
| | (1) | (2) | (1) | (2) |
| Dependent variable, (t-1) | 0.590*** | 0.669*** | 0.237*** | 0.377*** |
| | (0.107) | (0.100) | (0.0751) | (0.0685) |
| Log (number of conflicts) | -0.204 | -0.616** | 0.122*** | 0.0188 |
| | (0.266) | (0.253) | (0.0413) | (0.0273) |
| Log (GDP per capita) | 0.353 | 0.566** | 0.079*** | 0.139*** |
| | (0.221) | (0.227) | (0.028) | (0.028) |
| Population, growth rate | 1.998** | 2.185** | 0.179*** | 0.106*** |
| | (0.840) | (0.898) | (0.038) | (0.035) |
| Net ODA (Constant 2013) | -1.454*** | | -0.237*** | |
| | (0.363) | | (0.046) | |
| Polity2 | -0.333** | | 0.000371 | |
| | (0.164) | | (0.00534) | |
| Constant | 29.93*** | -2.461 | 4.794*** | -0.116 |
| | (7.639) | (3.561) | (0.912) | (0.267) |
| Observations | 319 | 324 | 546 | 581 |
| Number of id | 30 | 30 | 43 | 43 |
| AR2 Test | 0.112 | 0.188 | 0.025 | 0.003 |
| Sargan Test | 0.005 | 0.002 | 0.495 | 0.548 |

*Notes: \*\*\*, \*\* and \* indicate statistical significance at 1%, 5% and 10% respectively. Standard errors in parenthesis.*

**Table 4.5 –State (Legal) Capacity and Conflict (2000-2015) - GMM Estimation**

| VARIABLES | Rule of Law | Regulatory Quality | Govt. Effectiveness |
|---|---|---|---|
| Dependent variable, t-1 | 0.665*** | 0.730*** | 0.845*** |
| | (0.0780) | (0.0632) | (0.0720) |
| Log(number of conflicts) | -0.0121** | -0.0195*** | -0.0113* |
| | (0.00611) | (0.00661) | (0.00647) |
| Log (GDP per capita) | 0.0677*** | 0.150*** | 0.0322** |
| | (0.0153) | (0.0311) | (0.0158) |
| Population, growth rate | -0.0635*** | -0.00712 | -0.0397* |
| | (0.0157) | (0.0116) | (0.0223) |
| Net ODA | 0.0377*** | 0.0663*** | 0.0319** |
| | (0.00789) | (0.0126) | (0.0147) |
| Polity2 | 0.00834*** | 0.00825*** | 0.00335* |
| | (0.00229) | (0.00229) | (0.00202) |
| Constant | -1.277*** | -2.474*** | -0.853** |
| | (0.248) | (0.471) | (0.377) |
| Observations | 499 | 499 | 495 |
| Number of id | 43 | 43 | 43 |
| AR2 test | 0.486 | 0.182 | 0.030 |

*Notes: ***, ** and * indicate statistical significance at 1%, 5% and 10% respectively. Standard errors in parenthesis.*

## 4.4.2 State Capacity, Internal and External Conflict

Turning attention to state capacity, internal, and external conflicts, results of the OLS estimation is presented in Table 4.6. The table shows a strong negative correlation between internal conflict and tax revenue as the state capacity measure, while external conflict has a positive relationship. However, both internal and external conflicts positively affect state capacity when military expenditure is used as the measure of state capacity. The first model in the table controls for both internal and external conflict. In Model 2, only internal conflict is

controlled, for while Model 3 has just external conflict included in the specification. The same application applies when military expenditure is the measure of state capacity. Model 4 presents both internal and external conflict in the specification, while Models 5 and 6 have either internal or external controlled for in the specification.

**Table 4.6 - State capacity and Disaggregated Conflict – Baseline OLS Estimation**

| | Dependent Variable | | | | | |
|---|---|---|---|---|---|---|
| | Tax Revenue | | | Military Expenditure | | |
| Variables | (1) | (2) | (3) | (4) | (5) | (6) |
| Log (internal conflicts) | -0.990** | -0.806*** | | 0.0949 | 0.144*** | |
| | (0.416) | (0.265) | | (0.0955) | (0.0408) | |
| Log (external conflicts) | 0.631* | | 0.582 | 0.185* | | 0.231** |
| | (0.354) | | (0.360) | (0.103) | | (0.091) |
| Log (GDP per capita) | 0.993 | -1.102*** | 1.120 | 0.393*** | 0.076 | 0.411*** |
| | (0.895) | (0.370) | (0.910) | (0.140) | (0.068) | (0.139) |
| Population, growth rate | -3.235*** | -5.921*** | -3.213*** | 0.884*** | 0.242*** | 0.835*** |
| | (1.180) | (0.570) | (1.202) | (0.180) | (0.0855) | (0.173) |
| Net ODA (constant 2013) | 1.059 | -1.209*** | 0.450 | -0.49*** | -0.31*** | -0.41*** |
| | (0.744) | (0.453) | (0.711) | (0.142) | (0.0668) | (0.116) |
| Polity2 | 0.174 | 0.334*** | 0.266* | -0.028 | -0.002 | -0.027 |
| | (0.139) | (0.076) | (0.136) | (0.024) | (0.012) | (0.024) |
| Constant | -1.346 | 64.84*** | 5.789 | 6.31** | 6.82*** | 4.97** |
| | (17.40) | (8.823) | (17.46) | (2.85) | (1.43) | (2.51) |
| N | 146 | 369 | 146 | 204 | 593 | 204 |
| R-squared | 0.363 | 0.412 | 0.335 | 0.220 | 0.065 | 0.215 |

*Notes: ***, ** and * indicate statistical significance at 1%, 5% and 10% respectively. Standard errors in parenthesis.*

External conflict - without including internal conflicts to the regression analysis is positively correlated to both fiscal capacity variables, but only statistically significant when military expenditure is the dependent variable. However, we see external conflicts in Model 1 statistically significant when internal conflicts are taken into account. Besley and Persson (2008) find that total tax revenue - as a percentage of GDP is higher in countries with greater average incidence of external war. The results show that external conflict increases the amount that a government spends on its defence while there might not be any bearing to tax revenue. The idea that an increase in external conflict leads to more government spending on the military is plausible. Aziz and Asadullah (2016) argue that even though armed conflicts in nations have declined, countries continue to spend on defence due to various latent external threats to counter the nuclear, chemical, radiological and biological weapons amassed by rivals. In addition, many countries also face continuous threats of internal conflicts.[36] Other economists argue that spending boosts business confidence in conflicting countries, which facilitates investment and economic growth (Barro and Sala-i-Martin, 2004; Benoit, 1978; Dunn, Smith and Willenbockel, 2005; Kennedy, 1974 and Whynes, 1979).

Tax revenue as a percentage of GDP reduces with the presence of only internal conflicts with increasing levels of GDP per capita. Model 2 in Table 4.6 shows a negative relationship between GDP per capita and tax revenue. It is plausible that people's willingness to pay tax and/or to support and build the state capacity reduces because of the negative personal consequences of internal conflicts; this may undermine the trust citizens have in the state and consequently their reasons not to pay taxes. Due to not having any efficient data on local statutory tax rates, we cannot establish whether this change associated with conflict is driven

---

[36] There are various political groups that frequently engage in acts of terrorism and/or militancy, thereby threatening the domestic economy. In Africa, examples include *Democratic Forces for the Liberation of Rwanda* (FDLR), *Mai-Mai groups*, *National Congress for the Defence of the People* (CNDP) and *Patriotic Forces for the Liberation of Congo* (FPLC).

by changes in tax rates or changes in the degree of compliance with tax regulations. We are, therefore, unable to rule out that the reduction of tax revenue in times of conflict-related violence reflects a reaction of local authorities, rather than the population.

The GMM specification considers state capacity as a pre-determined regressor in the model and internal conflict as an endogenous variable. External conflict could be either endogenous or exogenous, but for the purposes of this study it is considered as an exogenous variable because the majority of the external conflicts are spill-overs from neighbouring countries and conflicts over land space. It should also be noted that causality can run from state capacity to conflict, but to limit the scope of the study this has not been considered. Table 4.7 shows a negative effect of internal conflict on tax revenue as a percentage of GDP and a positive effect on military expenditure.

The direction of the variables is consistent with the OLS results, but the magnitude of the coefficients somewhat differs. The coefficients of internal conflicts are similar to the OLS estimates, while the magnitude of the internal conflicts under military expenditure indicates that the existence of internal conflict in a given year will reduce its tax revenue and military expenditure approximately by 1.0 and 0.05 percentage points respectively. However, there is no significant relationship between internal conflict and military expenditure when GMM estimation method is used. This relationship does not hold when external conflict is excluded from the specification. With the exclusion of external conflict, internal conflict becomes positive and statistically significant in Model 5, where military expenditure is the state capacity measure. External conflict increases fiscal state capacity, while it decreases the legal state capacity. As stated earlier, the presence of internal and external conflicts can increase government spending to build military capacity to combat or repress the conflict. In the long run, this could positively affect economic growth by shortening the duration of conflict.

**Table 4.7 - State capacity and Disaggregated Conflict – GMM Estimation**

| | Tax Revenue | | | Military Expenditure | | |
|---|---|---|---|---|---|---|
| Variables | (1) | ( 2) | ( 3) | (4) | (5) | (6) |
| Dependent Variable, t-1 | 0.594*** | 0.589*** | 0.700*** | 0.865*** | 0.479*** | 0.860*** |
| | (0.091) | (0.109) | (0.073) | (0.104) | (0.0704) | (0.102) |
| Log (Internal Conflicts) | -0.997*** | 0.102 | | -0.0496 | 0.124*** | |
| | (0.319) | (0.197) | | (0.149) | (0.0368) | |
| Log (External Conflicts) | 0.221* | | 0.0567 | 0.231*** | | 0.209*** |
| | (0.116) | | (0.101) | (0.0889) | | (0.0586) |
| Log (GDP per capita) | -0.555 | -0.0541 | -1.245 | 0.766* | -0.826*** | 0.689* |
| | (0.766) | (0.765) | (0.771) | (0.441) | (0.211) | (0.373) |
| Population, growth | -2.062*** | -2.321*** | -2.368*** | 0.497** | -0.231** | 0.488** |
| | (0.762) | (0.714) | (0.771) | (0.224) | (0.0998) | (0.221) |
| Net ODA (constant 2013) | 0.346 | -0.916*** | -0.297 | -0.140 | -0.399*** | -0.179** |
| | (0.278) | (0.286) | (0.205) | (0.137) | (0.0668) | (0.0706) |
| Polity2 | 0.080 | 0.163*** | 0.188** | -0.016 | -0.001 | -0.014 |
| | (0.0769) | (0.0478) | (0.0763) | (0.0197) | (0.00601) | (0.0184) |
| Constant | 11.23 | 30.47** | 24.59** | -3.355 | 14.85*** | -2.197 |
| | (10.78) | (11.96) | (10.69) | (4.708) | (2.865) | (3.156) |
| Observations | 132 | 338 | 132 | 188 | 551 | 188 |
| Number of id | 25 | 30 | 25 | 39 | 43 | 39 |
| AR2 test | 0.875 | 0.099 | 0.786 | 0.124 | 0.002 | 0.113 |
| Sargan test | 0.265 | 0.101 | 0.173 | 0.097 | 0.000 | 0.174 |

*Notes: ***, ** and * indicate statistical significance at 1%, 5% and 10% respectively. Standard errors in parenthesis.*

Tables 4.8 and 4.9 present the OLS and GMM estimation for legal state capacity estimation respectively; the OLS results indicate both internal and external conflict negatively and significantly affects all three legal capacity variables. That is, the higher the number of conflicts in a given country, the more the legal capacity of that nation will reduce. This is intuitive, as conflicts have the tendency of disrupting rule of law, property rights, and government efficiency.

The government may also lack the incentive to invest in legal capacity if there is going to be a civil war outbreak or an on-going civil war. However, the GMM estimates are different, as increase in external conflict increases legal state capacity when internal conflict is controlled for; however, these estimates are not statistically significant. With the exclusion of internal conflicts in the model, the results differ, as coefficients external conflict changes sign and becomes statistically significant indicating both external and internal conflicts reduce the legal capacity of nations. This suggests that conflicts can reduce the ability of the government and its organisations to operate efficiently. GDP per capita, Polity, and Foreign aid are positive as expected, while increase in population reduces a country's legal capacity in SSA.

The major points to consider when comparing the system GMM results to the OLS are: first, in terms of the effect of internal conflict, the magnitude of the coefficients is reduced, albeit they exhibit similar statistical significance and negative and positive signs for both measures of fiscal state capacity. This change suggests that dynamic bias and endogeniety were present in the OLS results. Second, the system GMM results indicate that in addition to long-run effects identified in previous work (Besley and Persson, 2008; 2009), there is the possibility of short-run effects of internal conflict on state capacity, both on the fiscal and legal dimensions. Internal armed conflicts and armed confrontation between governments and organised opposition groups are a common occurrence with developing countries, especially

in Asia and Sub-Saharan Africa (Collier, 2007). This suggests that the overall economic loss

owing to conflicts is significant.

**Table 4.8 – State Capacity (Legal) and Disaggregated Conflict – Baseline OLS Estimation**

| Dependent Variables | Regulatory Quality | | | Rule of Law | | | Government Effectiveness | | |
|---|---|---|---|---|---|---|---|---|---|
| Exp. Variables | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Log (Internal Conflicts) | -0.074*** | -0.081*** | | -0.153*** | -0.130*** | | -0.075*** | -0.085*** | |
| | (0.026) | (0.014) | | (0.025) | (0.014) | | (0.024) | (0.013) | |
| Log (External Conflicts) | -0.066** | | -0.106*** | -0.041 | | -0.123*** | -0.101*** | | -0.141*** |
| | (0.029) | | (0.026) | (0.028) | | (0.026) | (0.027) | | (0.024) |
| Log (GDP per capita) | 0.301*** | 0.227*** | 0.285*** | 0.251*** | 0.196*** | 0.217*** | 0.296*** | 0.209*** | 0.279*** |
| | (0.041) | (0.023) | (0.042) | (0.039) | (0.023) | (0.042) | (0.038) | (0.021) | (0.038) |
| Population, growth rate | -0.127*** | -0.182*** | -0.0945** | -0.109** | -0.228*** | -0.0425 | -0.161*** | -0.285*** | -0.128*** |
| | (0.047) | (0.029) | (0.046) | (0.044) | (0.029) | (0.047) | (0.043) | (0.026) | (0.043) |
| Net ODA (constant 2013) | 0.223*** | 0.158*** | 0.163*** | 0.266*** | 0.166*** | 0.142*** | 0.239*** | 0.199*** | 0.179*** |
| | (0.037) | (0.026) | (0.031) | (0.035) | (0.023) | (0.031) | (0.034) | (0.021) | (0.029) |
| Polity2 | 0.030*** | 0.035*** | 0.027*** | 0.019*** | 0.026*** | 0.014* | 0.016** | 0.024*** | 0.014** |
| | (0.007) | (0.004) | (0.007) | (0.007) | (0.004) | (0.007) | (0.006) | (0.004) | (0.007) |
| Constant | -6.617*** | -4.722*** | -5.633*** | -7.049*** | -4.455*** | -5.024*** | -6.897*** | -5.228*** | -5.908*** |
| | (0.743) | (0.488) | (0.666) | (0.699) | (0.490) | (0.672) | (0.683) | (0.448) | (0.615) |
| Observations | 199 | 594 | 199 | 199 | 594 | 199 | 199 | 594 | 199 |
| R-squared | 0.511 | 0.338 | 0.490 | 0.474 | 0.344 | 0.370 | 0.551 | 0.397 | 0.529 |

*Notes: \*\*\*, \*\* and \* indicate statistical significance at 1%, 5% and 10% respectively. Standard errors in parenthesis.*

**Table 4.9 - State (Legal) Capacity and Disaggregated Conflict – GMM Estimation**

| Dependent Variables | Regulatory Quality | | | Rule of Law | | | Government Effectiveness | | |
|---|---|---|---|---|---|---|---|---|---|
| VARIABLES | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| L.dependent | 0.932*** | 0.864*** | 0.922*** | 0.870*** | 1.087*** | 0.796*** | 0.983*** | 0.946*** | 0.967*** |
| | (0.061) | (0.063) | (0.081) | (0.116) | (0.166) | (0.072) | (0.080) | (0.084) | (0.078) |
| Log (Internal Conflicts) | -0.066*** | -0.014* | | -0.069*** | -0.048*** | | -0.065** | -0.054*** | |
| | (0.019) | (0.009) | | (0.022) | (0.011) | | (0.026) | (0.020) | |
| Log (External Conflicts) | 0.018 | | -0.034** | 0.027 | | -0.039*** | 0.021 | | -0.048* |
| | (0.014) | | (0.014) | (0.020) | | (0.011) | (0.016) | | (0.025) |
| Log (GDP per capita) | 0.081 | 0.066* | -0.014 | 0.073 | -0.059 | 0.097 | -0.044 | -0.021 | -0.014 |
| | (0.056) | (0.038) | (0.069) | (0.100) | (0.091) | (0.079) | (0.053) | (0.074) | (0.069) |
| Population, growth rate | -0.021 | -0.0042 | -0.021 | -0.025 | -0.022 | -0.037 | -0.073** | -0.067** | -0.023 |
| | (0.031) | (0.011) | (0.030) | (0.039) | (0.014) | (0.078) | (0.034) | (0.032) | (0.031) |
| Net ODA (constant 2013) | 0.088*** | 0.033*** | 0.036*** | 0.073*** | 0.033 | 0.041* | 0.071** | 0.071** | 0.022 |
| | (0.023) | (0.013) | (0.013) | (0.024) | (0.021) | (0.023) | (0.034) | (0.031) | (0.017) |
| Polity2 | 0.002 | 0.005* | 0.004 | 0.025** | -0.005 | 0.031*** | 0.002 | -0.004 | -0.012 |
| | (0.003) | (0.003) | (0.004) | (0.012) | (0.006) | (0.010) | (0.008) | (0.010) | (0.010) |
| Constant | -2.088*** | -1.176** | -0.609 | -1.803* | 0.156 | -1.617** | -0.723 | -0.977 | -0.208 |
| | (0.643) | (0.526) | (0.672) | (1.096) | (1.171) | (0.806) | (0.845) | (0.990) | (0.742) |
| Observations | 171 | 508 | 171 | 171 | 508 | 171 | 171 | 171 | 171 |
| Sargan test | 0.393 | 0.000 | 0.308 | 0.044 | 0.016 | 0.140 | 0.006 | 0.031 | 0.101 |
| AR2 test | 0.329 | 0.147 | 0.428 | 0.041 | 0.147 | 0.001 | 0.876 | 0.977 | 0.879 |

*Notes: \*\*\*, \*\* and \* indicate statistical significance at 1%, 5% and 10% respectively. Standard errors in parenthesis.*

## 4.4.3 Robustness Check

The robustness test uses an index for both measures (fiscal and legal) of state capacity. The results obtained are presented in Tables 4.10 and 4.11 below. First, an index is generated for fiscal state capacity by creating an average of the fiscal measures of state capacity. The result obtained shows no statistical relationship between conflict and state capacity when both OLS estimation and fixed and random effects estimation methods are used. There are similar signs - but no empirical basis - to suggest conflict affects state capacity when both measures are used as an index. However, there is a negative and significant correlation when the GMM estimation method is used, indicating conflict does affect state capacity. Since the GMM method has been assumed as the superior methodology, it is believed that higher levels of conflict negatively impacts the capacity of the state.

Looking at the table in detail, the number of conflicts exhibits a negative correlation with the fiscal capacity index when the OLS estimation method is used; the relationship becomes positive, having no statistical significance when fixed and random effects methods are used. The result changes when *GMM* is used. A percentage increase in number of conflicts is seen to decrease fiscal capacity by 0.48%. Compared to the *GMM* estimation result when either tax revenue as a percentage or military expenditure as a percentage of GDP is used, the results show that the estimation is robust to conflict reducing fiscal state capacity.

A legal capacity index is also generated for the three measures of legal state capacity. A geometric mean index with equal weights is generated and the results are presented in Table 4.11. The table highlights very similar results with respect to sign and significance when the legal index is used as the dependent variable, proposing the results are consistent and that conflicts reduce legal state capacity in SSA.

**Table 4.10 – State Capacity and Conflict (2000 - 2015)**

*Dependent Variable- Fiscal capacity index*

| Variable | OLS | Random effect | GMM |
|---|---|---|---|
| Log(number of conflicts) | -0.089 | 0.018 | -0.480* |
| | (0.123) | (0.105) | (0.281) |
| Lagged Fiscal capacity index | | | 0.504*** |
| | | | (0.146) |
| Log (GDP per capita) | 1.242*** | 1.135** | 0.275 |
| | (0.219) | (0.526) | (0.606) |
| Population, growth rate | -1.192*** | 0.161 | -0.743 |
| | (0.281) | (0.31) | (0.507) |
| Net ODA | 0.112 | 0.577*** | 0.13 |
| | (0.184) | (0.201) | (0.147) |
| Polity2 | 0.185*** | -0.04 | 0.101*** |
| | (0.041) | (0.062) | (0.028) |
| Constant | -0.736 | -13.111** | 1.835 |
| | (4.075) | (5.133) | (7.145) |
| N | 603 | 603 | 560 |

*Notes: \*\*\*, \*\* and \* indicate statistical significance at 1%, 5% and 10% respectively. Standard errors in parenthesis.*

**Table 4.11 – State Capacity and Conflict (2000-2015)**

*Dependent Variable is Legal capacity index*

| Variables | OLS | Fixed Effects | GMM |
|---|---|---|---|
| Log(number of conflicts) | -0.089*** | -0.024*** | -0.018*** |
|  | (0.012) | (0.006) | (0.006) |
| Legal capacity index, t-1 |  |  | 0.909*** |
|  |  |  | (0.09) |
| Log (GDP per capita) | 0.186*** | 0.217*** | 0.051 |
|  | (0.02) | (0.04) | (0.042) |
| Population, growth rate | -0.159*** | -0.004 | 0.007 |
|  | (0.025) | (0.017) | (0.010) |
| Net ODA (constant 2013) | 0.120*** | 0.021* | 0.024** |
|  | (0.017) | (0.012) | (0.010) |
| Polity2 | 0.044*** | 0.011*** | 0.006 |
|  | (0.004) | (0.004) | (0.004) |
| Constant | -3.754*** | -2.571*** | -0.866 |
|  | (0.382) | (0.329) | (0.540) |
| N | 594 | 594 | 508 |

*Notes: \*\*\*, \*\* and \* indicate statistical significance at 1%, 5% and 10% respectively. Standard errors in parenthesis.*

**Table 4.12 - State capacity and Disaggregated Conflict**

*Dependent Variable – Fiscal capacity index*

| | OLS Estimation | | | GMM Estimation | | |
|---|---|---|---|---|---|---|
| Variables | 1 | 2 | 3 | 4 | 5 | 6 |
| L.Fiscal capacity index | | | | 0.724*** | 0.373** | 1.011*** |
| | | | | (0.217) | (0.166) | (0.119) |
| Internal Conflicts | -0.458** | -0.142 | | -1.339** | -0.499* | |
| | (0.221) | (0.123) | | (0.563) | (0.271) | |
| External Conflicts | 0.706** | | 0.421* | 0.984*** | | 0.320** |
| | (0.273) | | (0.237) | (0.361) | | (0.128) |
| Log (GDP per capita) | 2.558*** | 1.230*** | 2.531*** | 3.517** | 0.380 | 3.270** |
| | (0.384) | (0.219) | (0.387) | (1.384) | (0.569) | (1.318) |
| Population, growth | -0.125 | -1.208*** | 0.0571 | 1.145 | -0.946* | 1.987** |
| | (0.472) | (0.281) | (0.468) | (0.840) | (0.495) | (0.777) |
| Net ODA (constant 2013) | 0.827** | 0.140 | 0.579* | 0.401 | 0.137 | -0.373* |
| | (0.327) | (0.184) | (0.306) | (0.278) | (0.144) | (0.214) |
| Polity2 | 0.00784 | 0.185*** | -0.0149 | -0.0339 | 0.125*** | -0.109*** |
| | (0.066) | (0.041) | (0.066) | (0.043) | (0.032) | (0.041) |
| Constant | -23.10*** | -0.971 | -19.97*** | -28.65*** | 2.339 | -20.09** |
| | (6.357) | (4.048) | (6.227) | (10.36) | (6.736) | (7.847) |
| Observations | 209 | 603 | 209 | 192 | 560 | 192 |
| R-squared | 0.322 | 0.184 | 0.306 | | | |
| Number of id | | | | 40 | 44 | 40 |

*Notes: ***, ** and * indicate statistical significance at 1%, 5% and 10% respectively. Standard errors in parenthesis.*

**Table 4.13 - State capacity and Disaggregated Conflict**

*Dependent Variable – Legal capacity index*

| VARIABLES | OLS Estimation | | | GMM Estimation | | |
|---|---|---|---|---|---|---|
| | *(1)* | *(2)* | *(3)* | *(4)* | *(5)* | *(6)* |
| Legal index, t-1 | | | | 0.860*** | 0.871*** | 0.694*** |
| | | | | (0.147) | (0.085) | (0.111) |
| Log (internal conflicts) | -0.061*** | -0.088*** | | -0.089*** | -0.015** | |
| | (0.023) | (0.012) | | (0.0214) | (0.006) | |
| Log (external conflicts) | -0.082** | | -0.120*** | 0.058** | | -0.031*** |
| | (0.027) | | (0.023) | (0.025) | | (0.011) |
| Log (GDP per capita) | 0.231*** | 0.187*** | 0.226*** | 0.372*** | 0.083** | 0.353*** |
| | (0.039) | (0.020) | (0.039) | (0.110) | (0.0400) | (0.100) |
| Population, growth rate | -0.096** | -0.159*** | -0.078* | -0.062 | 0.020 | 0.064 |
| | (0.044) | (0.025) | (0.044) | (0.073) | (0.023) | (0.080) |
| Net ODA (constant 2013) | 0.162*** | 0.119*** | 0.128*** | 0.046*** | 0.027** | 0.002 |
| | (0.032) | (0.017) | (0.030) | (0.017) | (0.011) | (0.011) |
| Polity2 | 0.028*** | 0.044*** | 0.023*** | 0.0049 | 0.0082** | 0.0035 |
| | (0.007) | (0.004) | (0.007) | (0.004) | (0.004) | (0.0024) |
| Constant | -5.210*** | -3.771*** | -4.758*** | -3.074*** | -1.222** | -2.791*** |
| | (0.622) | (0.383) | (0.608) | (0.843) | (0.515) | (0.787) |
| Observations | 209 | 594 | 209 | 180 | 508 | 180 |
| R-squared | 0.507 | 0.446 | 0.489 | | | |
| Number of id | | | | 40 | 44 | 40 |

*Notes: \*\*\*, \*\* and \* indicate statistical significance at 1%, 5% and 10% respectively. Standard errors in parenthesis.*

## 4.5 Conclusion

The main contribution of this study is that for SSA countries, internal conflicts reduce fiscal state capacity, while external conflicts increase the capacity of the state. This supports existing literature on the relationship between external wars and state capacity, highlighting the role that major international wars play in the construction of the modern state. External conflicts tend to have positive effect on state capacity across countries. For the sample of SSA countries, both the OLS and GMM estimations in our analysis are consistent with the hypothesis that internal conflict disrupts state capacity. It is assumed that, on average, countries involved in an internal conflict have less capacity to collect taxes and govern efficiently than countries not involved. Arguably, a country in the midst of an internal conflict will be less capable of collecting taxes and governing efficiently compared to a situation where there is no conflict.

This empirical result follows the existing literature that internal conflicts divide societies and make it more difficult for government to reach a consensus in investing in state capacity (Cardenas et al., 2010). In other words, a country with weak state capacity intensifies conflict thereby generating a negative spiral. From the results obtained, external conflicts are important in building state capacity, as it seems there is increase in military expenditure. On the other hand, a country that experiences external conflicts periodically will suffer overall economic instability and possible displacement of its citizens (Ganegodage and Rambaldi, 2013).

The results also suggest that both internal and external conflicts reduce the state capacity when the legal variables are considered. These results are consistent when the persistence of state capacity over time and endogeneity is taken into account. Primarily, the legal state capacity should promote markets and property rights in the country. The results show that both forms of conflict reduce the ability of the government to build this dimension of state capacity. The potential reverse causality between state capacity and conflict has not been

126

considered. It is plausible that state capacity could either increase or decrease the onset of conflict, most especially internal conflicts.

Looking at the type of conflict with a greater effect, the results show that both internal and external conflicts affect the state capacity with different magnitudes, depending on which control variables are considered. For the purposes of this study, the empirical results suggest that internal conflict reduces the state capacity, while external conflict increases the fiscal capacity of the state. The intensity of each type of conflict was not considered, as it was outside of the scope of the study. Further research into the intensity may indicate a bigger negative magnitude. Intuitively, probable factors or mechanisms through which internal conflict reduces state capacity could include: the deterioration of the tax administration system; the impediment of tax collectors to go about their business; a reduction in the willingness to pay taxes by citizens who do not feel protected or who feel that the government is being replaced by organised opposition groups; reduced trust in the state, making the citizens less willing to pay taxes; and reduced incentives for public goods provisions. In turn, attacks committed by armed groups undermine the governments' ability to provide public goods, safeguarding property rights, and maintaining law and order.

Developing the understanding of the consequences of conflict on state capacity is important for various reasons. First, effective action towards managing conflict or ensuring peace could be costly due to endless negotiations and peace deals; it is therefore important for government to understand the impact of conflicts on state capacity and the need to repress the conflicts before they occur. Second, a strong state is often recognised as a precondition for true development (Cardenas et al., 2016); understanding the reasons why conflicts affect state capacity helps shape actions to overcome the negative effects.

# CHAPTER 5

# Effects of Natural resources on Civil Conflict in Sub-Saharan Africa

## 5.1 Introduction

Over the years, growing attention has been devoted to understanding the relationship between conflicts and natural resources (Collier and Hoeffler, 2004; Fearon, 2005; Humphreys, 2005; Lujala et al., 2005; Ross, 2004). Seven of the world's eight bloodiest conflicts have been in Africa, with natural resources playing a strong role (Kurečić et al., 2015); while some of these conflicts are political in nature by their character, natural resources have played an important role in almost all of them (Cuvelier et al., 2013). The pioneering works of Collier and Hoeffler (1998, 2004) - further discussed the by Lujala (2010) and Ross (2004) argue that accessible resource wealth increases the motivation of rebels to accumulate private gain and provides rebel leaders sufficient funding opportunities to organise armed groups, thereby increasing the risk of conflict. Intuitively, by their role in financing conflicts, natural resources generally can either be the root cause of conflicts or the cause of prolonging conflicts, resulting in economic instability.

Natural resources refer to oil, minerals, forests, and fertile land that occur in nature and can be exploited for economic gain. These resources frequently represent an important source of income and power; land, in particular, is essential to the livelihoods of millions of people. When poorly managed, distributed, or controlled in an unfair or unequal manner, it can be a major driver of conflict or instability. The above underscores the importance of natural resources in motivating and driving conflicts and how the different types impact on conflict.

Resource scarcity or abundance has been a dominant feature in the conflict literature, from the vulnerability of resource-rich regions - which is sometimes based on the dissatisfaction from resource rents - to the outbreaks of local population embedded in resource scarcity (Maxwell and Reuveny, 2000). International powers have often intervened in resource disputes in these regions to protect their interest (Kehl, 2010). According to Klare (2004), the intensity of a conflict can also be aggravated by the type of natural resources; the authors suggest that, in particular, oil reserves have proven to be a major cause of conflicts and civil wars. The exploitation of these natural resources sometimes causes resistance, since it is usually done without the consent of the local population, who often receive little gains - if any - from the resource exports rents. Exploitation of these natural resources by foreign companies sometimes destroys the environment and displaces the local population - very often minorities and the indigenous - from their habitats (Klare, 2001). Specifically, the consequences of resource exploitation often include land expropriation and environment destruction (deforestation and oil pollution among several others).

The approach followed in this study is as follows: first, by understanding if and how natural resources relate to conflict in SSA, the study aims to contribute to existing literature; second, by analysing duration and onset of conflict specifically for SSA, this research seeks to provide a better understanding of the relationship between conflicts and natural resources. The rest of the chapter is organised as follows: Section 5.2 and 5.3 present a brief review of theoretical and empirical literature; the research questions and hypotheses are discussed in section 5.4. Section 5.5 presents the data and methodology; section 5.6 discusses the empirical results; section 5.7 concludes.

## 5.2 Brief Review of the theoretical frameworks on Conflicts and Natural Resources

### 5.2.1 Natural resources and the onset of conflict

The relationship between natural resources and conflict has gained attention in the last decade, somewhat due to availability of good quality data and as a result of a more refined theory on the "resource curse" (Collier and Hoeffler, 2004; Di John, 2007; Fearon and Laitin, 2003; Fearon, 2005; Le Billon, 2001; Snyder and Bhavnani, 2005). The studies of Collier and Hoeffler (1998, 2004) maintain that the abundance of natural resources represents a highly profitable opportunity for greedy rebels; thus, resource wealth is the most common source motivating and conditioning rebellion. The availability of natural resources increases rebels' incentives to loot resources for private wealth and increases the value of overthrowing the government which holds the resource wealth and dominates resource-rich areas. In wartime - relative to peacetime, rebels can easily continue to commit criminal activities - such as looting or the illegal trading of spoils - to accumulate their own private gains (Keen, 2000).

When access to these natural resources become the reason for conflict – or, much more frequently, are used to fuel a conflict - the situation becomes much more complicated. The rebel groups *Revolutionary United Front (RUF)* in Sierra Leone and *National Union for the Total Independence* of Angola (known by its Portuguese acronym UNITA) used revenues derived from diamond mining to fund their rebellions against their respective governments. Research also indicates that wars appear to be long-lasting; the expected duration of conflict is now more than double that of conflicts that started prior to 1980 (Collier, 2003). A possible explanation for this could be that it is much easier to sustain and fund conflict than it used to be. Natural resources are used either locally or as a form of revenue for the government. More often than not, it is the revenue-producing resources that cause the most problems; this is sometimes called the 'resource curse', which describes the contradiction that countries with abundant natural

resources often have less economic growth than those without natural resources (Bannon and Collier, 2003). The dependence on these sources of revenue usually discourages diversification, leads to overheating of the economy, and increases volatility of prices. The abundance also often leads to government mismanagement and corruption. Competition over these resources can lead to, intensify, or sustain violence.[37]

Violent conflict can also be as a result of non-participation or negligible participation of the local population in resource rent spending, which has turned into civil wars in some instances. A common feature in all these conflicts is the fact that minority populations at the state level represent a majority in the area where resources are exploited. These populations are usually on the margin of society, despite the fact that they live in resource-abundant areas. Examples of conflicts that have arisen because of these situations are the conflict in the Niger Delta- Nigeria, the conflict on Bougainville Island, and the conflict in the Indonesian provinces of Irian Jaya (West Papua) and Aceh (on Sumatra Island). Rather than full-fledged war, these conflicts usually involve smaller-scale skirmishes, roadblocks, acts of sabotage, and major human rights violations by state security forces and rebel groups.

A number of these conflicts, however, have evolved into political unrest in the countries involved (Renner, 2002). Often-times, what was initially a resource conflict has turned into a political and ethnic conflicts, in which one population wants to overpower - or at least receive full autonomy - from the central government, consequently getting what they consider a fair share of resource-rents. What starts out as an internal (intra state) conflict, can become a civil war, and can turn into an international (interstate) conflict. Due to the uncontrolled and therefore porous borders, rebels often use other states' territories to conduct military and looting operations in order to fight against the government forces. Foreign companies and smugglers -

---

[37] It should be noted here that conflict over natural resources is often part of - and exacerbates - a larger struggle over political, economic, cultural, or religious issues in the society.

as well as neighbouring states - are also often involved in these conflicts. "Blood" diamonds are probably the best example of this practice, which occurred in Angola and Sierra Leone. The majority of internal conflicts or civil wars that do not breakout as resource conflicts in the naturally resource-rich areas soon become resource conflicts. Natural resources also became means of prolonging conflicts, which can be positive for one side - usually the rebels. However, government forces are also overseeing and securing resource exploitation - which is usually needed to finance warfare - and that is expensive. At the same time, these extraordinary conditions represent a very good opportunity for corruption. Regimes that are dependent on resources for their financing can become more prepared to negotiate peace if rebels are successful in blocking resource exploitation. Humphreys (2005) posits six different mechanisms that could explain the relationship between natural resources and conflict:

*The Greedy Rebels mechanism with three variants:* The first variant argues that domestic groups engage in quasi-criminal activity to benefit from resources, independent from the state. Another argument of the Greedy Rebels mechanism by Fearon and Laitin (2003) suggest that natural resources could be an avenue for rebels to gain state control, as in the case of Chad or the Republic of Congo. Plausibly, the first variant may lead to the second or vice versa, as in Sierra Leone, where control of the diamond areas sufficiently weakens the state and state capture becomes easier. In a third variant, if natural resources are concentrated in a particular region of a country, this may increase beliefs among discontented groups that a seceding state could be viable or even prosperous.[38] This mechanism does not require that rebels control resources directly; it may be sufficient to extract rents from those who do, as has been done with oil extractors in Colombia, Cabinda Province in Angola, and Nigeria.

---

[38] Similar arguments have been made for the cases of Biafra in Nigeria, Katanga in Congo, Cabinda in Angola, Casamance in Senegal, Bougainville in Papua New Guinea, and Southern Sudan.

***The Greedy Outsiders mechanism:*** Rather than greed from rebels as discussed above, the existence of natural resources may be an incentive for third parties – states and corporations - to engage in or foster civil conflicts. For example, the escalation of civil war in Democratic Republic of Congo has resulted in part from the involvement of neighbouring states seeking raw materials (Dashwood, 2000; Meldrum, 2000; Willum, 2001). The secessionist bid in Katanga in Congo was supported - if not instigated - by the Belgian firm *Union Minière du Haut Katanga*, and evidence suggests that the French oil corporation *Elf* took actions that led to an escalation of the conflict in the Republic of Congo (Verschave, 2000).

***The Grievance mechanism:*** Natural resource dependence could in fact be associated with grievances rather than greed. There are at least four variants of this mechanism: first, countries with middling levels of dependence on natural resources may be experiencing transitory inequality as part of the development process;[39] second, economies that are dependent on natural resources may be more vulnerable to trade shocks. These could cause instability and dissatisfaction within groups that suffer from the shocks (in this case, the problem is not with dependence on natural resources, per se, but that natural-resource-dependent economies are likely to be dependent on a small number of commodities for their export earnings);[40] third, the process of extraction may produce grievances, for example, through forced migration. Ross (2004) describes externalities of the extraction process itself in Aceh and Papua New Guinea, such as environmental damage and loss of land rights; finally, natural resource wealth may be seen as more unjustly distributed than other wealth, as has been claimed in Sierra Leone and Nigeria. In Niger, the insurgent groups stress not just that the north receives little investment

---

[39]For example, the Kuznets curve hypothesis, which predicts transitory inequality resulting simply from the fact that different parts of an economy may develop at different rates.

[40] Vulnerability will also be more likely if the risks associated with the commodities are highly correlated, either in terms of price fluctuations or in terms of production conditions, such as the weather. There is no reason to expect that an economy exporting a diversified portfolio of natural resources will be particularly susceptible to income shocks.

from the political centre in the south, but also that the south relies economically on revenues gained from the uranium wealth of the north, with no visible returns to the north. Such are the fears presently in Chad; with no expectation that any of the oil revenues will accrue to their region, local leaders in the Doba area have petitioned to the oil corporations for direct compensation in the form of scooters for each village leader.

*The Feasibility mechanism:* Natural resources could provide a way to finance rebellions that have been started for other reasons, thereby increasing the prospects of success. In other words, natural resources provide the opportunity - as opposed to the motivation for the conflict. This occurs either through control of production during conflict or through the sales of booty futures. With this mechanism, natural resources are seen as a permissive cause - and not a root cause - of conflict.

*The Weak State mechanism:* The structure of a state may be weaker if it is dependent on natural resources. There are two prominent variations of the argument, both of which focus on the strength of state-society linkages. One variant focuses on the society side of weak society-state relations and holds that when citizens are untaxed by governments, they have less power over them; they may have less information about government activity, weaker incentives to monitor government behaviour, and fewer instruments at their disposal to withdraw support from governments. Accordingly, resource-dependent states may have little compulsion to respond to the demands of their citizens or create structures that engage their citizens. The implications of these arguments are ambiguous, insofar as they may result in greater insulation, but less resilience of the state. The second channel focuses on the state side of state-society relations, arguing that governments that rely on natural resources - rather than taxation - have weakened incentives to create strong institutions. This argument is based on oil-dependent states and is

stressed by Fearon and Laitin (2003), who argue that oil states are more likely to have weak structures because they have less need for intrusive organisations to raise revenue (Moore, 2001). The result may be a state divorced from domestic economy, such as Democratic Republic of Congo under Mobutu's regime.

*The Sparse Network:* Reasonably, the importance of natural resources may lie in their impacts on the daily economic activities of the citizens of an economy, how these in turn affect attitudes of the citizens, and how they relate with each other. The sparse network is an indirect route that could function in many different ways. First, natural-resource-dependent economies may have weak manufacturing sectors - an effect intensified by "Dutch Disease" dynamics[41] - and correspondingly low levels of internal trade. To an extent internal trade is associated with greater levels of social cohesion and interregional interdependence; if manufacturing sectors are weak and the economy is fragmented into different production enclaves, this may raise conflict risks. The argument that dense trade networks reduce conflict risks is already well established in the study of international conflicts. Liberal theorists argue that where trade is mutually beneficial, to fight with a trading partner would be to commit "commercial suicide" (Angell, 1933). Related arguments claim that trading partners through exchange develop greater understanding for each other's' cultures. Also, political philosophers suggest that trade reduces the risk of conflict because trade alters cultures: that there is something about trade that makes people less violent (Hirschman, 1982; Ensminger, 2001). Empirical research demonstrates that once proximity is taken into account, states that trade with each other are less likely to fight each other (Doyle, 1997; Oneal and Russett, 1999; Russett, 2002).[42] However,

---

[41] Dutch Disease" describes the effect of a rise in the price of non-tradables relative to tradables that adversely impacts on non-boom exporting sectors. The effect may also lower growth if manufactured exports are more growth-enhancing than non-tradables. Since growth is negatively associated with conflict, it could be that natural resources effect conflict via their impact on growth.

[42] Evidence suggests that when variables such as geographic proximity are controlled for, trade reduces conflict.

good cross-national measures of the density of internal trade or the scarceness of internal networks do not exist, and so this hypothesis - tested at the international level - is unproven at the within-country level.

There are many other possible mechanisms underlying the relationship between natural resources and conflict that do not suggest that civil war is typically a result of greed. Different mechanisms require different sorts of policy responses. It is, however, essential to know what response is most appropriate and this requires thinking more carefully about ways to distinguish the workings of these different mechanisms. This chapter attempts to empirically examine how natural resources affect the onset and duration of conflict.

## 5.2.2 Natural resources and the Duration of conflict

There are different avenues through which natural resources may affect the duration of conflict. Humphreys (2005) points out seven ways this could occur, but only five will be discussed in this chapter:

*The Feasibility Mechanism*: It is possible that financing from natural resources creates longer wars by enabling rebel groups to keep fighting; the marginal effect of local natural resource endowments may be to increase duration. The duration of the Angola conflict is in part explained by the fact that both sides had access to natural resource financing to support their combatants. Across Sub-Saharan African states, there is evidence for this idea; the wars in Senegal and Sudan have been long in duration and rebel groups have been able to benefit directly from the resources – both commodities and non-traded foodstuffs – around them. Conflicts in Niger and Mali have been more difficult to sustain; the regions occupied by insurgents in these countries have not been wealthy enough to support a protracted struggle.

***The Military Balances Mechanism:*** The financing available to the military is of use not just for keeping combatants alive and fighting, but for protecting assets and inflicting damages on the opposing side; these are effects that influence the ease of victory and may also influence the ease of negotiated settlements. To an extent, the link between natural resources and conflict through this mechanism assumes that one side will have more assets available to them, thus prolonging the duration of the conflict. The expectation – based on the quantitative study of international wars – is that wars with financial asymmetries are likely to be less in duration. In this instance, the marginal impact of quantities of natural resources on duration depends on whether they tend to produce more symmetric or less symmetric forces. One implication of this logic is that changes in international policy and actions on conflict financing – such as the regulation of the diamond trade – can *increase* conflict duration if they lead to greater symmetry between combatant sides.

Ross (2002) suggests that "booty futures" financing – meaning financing to secure assets that can be gained after war ends – can be associated with longer wars. However, it is not clear why this should be so; as the mechanism requires the ability to make credible commitments, it is expected that it works to the advantage of one side only: the government, or rather, the side that already has rights that it can sell and that can – in principle – be enforced with the help of the international system. This thereby leads to asymmetries and possibly shorter wars. In any case, whichever side is financed by booty futures, if benefits accrue only after a conflict ends, it is expected that financiers will act only when they expect wars to be short or when they seek to ensure that wars are short.


***The Fragmented Organisational Structures Mechanism:*** A new line of research argues that that the extent to which the benefits from conflict require *joint* production may affect rebel organisational structures. Le Billon (2001) emphasises on the centralisation of the production

process, with concentrated resources – such as oil – requiring more organisational cohesion and allowing for more hierarchical organisational structures than diffuse resources such as minerals. As Ross (2003) argues, goods also vary in how they can be marketed and this, too, can affect group cohesion.

Weinstein (2005) examines the benefits that can be targeted to individuals in the short run and those benefits that accrue only in the long term and are conditional on the success of the rebellion. Researchers (Collier, Hoeffler, and Söderbom, 2001; Sambanis, 2004) suggest a positive relationship between the cohesiveness of a rebel organisation – or its degree of hierarchy – and the duration of a conflict.[43] The experiences of Senegal and Mali, however, both suggest that, if anything, the lack of cohesiveness leads to longer conflicts. While cohesiveness may improve the fighting capacity of a group – and thereby delay any military victory over the group by the government – in a context where military victory is unlikely, cohesiveness may instead lead to an improved ability to reach a negotiated settlement. On the other hand, the lack of cohesion can prevent effective negotiation by preventing the formulation of a coherent system or set of demands; it may also result in an inability on the part of rebel groups to convince the state that they can deliver what they offer.

***The Domestic Conflict Premium Mechanism:*** Groups that benefit during conflict may prefer to fight than to win, therefore acting as spoilers to peace processes. Keen (1998) and Collier (2000) argue that if natural resource endowments are associated more with greed-inspired rebellions, then the fighters in these conflicts may not have an interest in the success of negotiations. Weinstein (2005) adds a new element to such domestic conflict premium arguments. He argues that the nature of the resources available to a group can structure the

---

[43] More hierarchical structures may lead to longer wars because the leadership is less likely to suffer personally from the costs of the conflict and is more likely to gain a large share of benefits. However, if a settlement can be negotiated that benefits the leadership; more hierarchical organisations may be better able to guarantee the adherence of the organisation to the terms of the settlement.

*characteristics* of the group's membership. Groups with natural resource wealth may be more likely to attract "consumers" that benefit from the rewards that take place during conflict; they might be less capable of attracting "investors", who may be driven by benefits that are realised only after successful collective action.

Humphreys (2005) posited a caveat to the argument above. He argues that in establishing a link between the benefits of war and the duration of conflict, it is important to know that individuals not only benefit in wartime, but also believe that they benefit more than they would in times of peace. The real question, though, is what prevents parties from agreeing on a peaceful arrangement that leaves everyone better off? Usual answers to this question focus on the ability of agents to make credible commitments to each other to honour agreements made in war time. Another possibility is a feasibility constraint on negotiators; individuals may not do well out of war because they are engaged in illegal activities that they would not be able to undertake during peacetime.

*The International Conflict Premium Mechanism*: This mechanism recognises the pressure that third parties can have on conflict and conflict resolution; their incentives can help determine the duration of conflicts. Neighbouring states can provide sanctuary for rebel bases within their borders and can provide logistical support to one side or another. They can also facilitate mediation. Which of these they decide to do may depend again on the optimal benefits they can expect to achieve during wartime relative to those they could gain in a negotiated settlement, a feature that can often depend on the resource endowments of their neighbours. The greatest international influence on the duration of the Mali conflict was probably that exerted by Algeria; the Mali conflict took place in a region bordering southern Algeria, home to Berber populations living in similar conditions to those of Tuareg groups in Mali. Algeria had security reasons for not wanting the conflict drag on, but it also failed to gain economically

from the conflict. It used its control over supply routes and over Tuareg exiles and refugees in Algeria to place pressure on the rebels. And as a major supplier of oil as well as military and economic aid, it placed pressure on Bamako. Countries neighbouring Senegal did not have the same fears of a spread of the conflict, with neither Guinea-Bissau nor Gambia having strong motivations to bring the conflict to an end. Indeed, both countries have benefited from the war economy associated with the conflict; Guinea-Bissau routed cashew exports through the zone and acted as a market to areas more isolated from Senegalese markets; Gambia was involved with the routing of cannabis and timber exports through the country (Evans, 2002). As a result, not only have the rebels not come under pressure from these sources, but they have benefited financially and militarily from their relations with them.

## 5.3 Empirical Literature on Conflicts and Natural Resources

Researchers have divided the proponents of socio-economic theories of resource conflicts into two groups – with regard to the resource abundance or resource scarcity – as the cause of conflict. Le Billon (2001) states that according to advocates of the scarce resource wars hypothesis, people or nations will fight each other to secure access to the resources necessary for their survival: the more scarce the resource, the more bitter the fight. The resource abundance conflict literature argues that primary commodities are easily and heavily taxable and are therefore attractive to both the ruling elites and their competitors. In the first group are, among others, Collier and Le Billon, and in the second Homer-Dixon (1999) and Renner (1996). Among the studies of resource conflict, Collier and Hoeffler (2004) analyse 54 large-scale civil wars that occurred between 1965 and 1999, finding that higher share of primary commodity exports in GDP significantly and substantially increases the risk of conflict. They compare countries with 10% and 25% of their GDP coming from resources; holding other

characteristics constant at the mean for low-income developing countries, the risk of a civil war for these countries in the subsequent five years rises from 11% to 29%. They investigate whether there were significant differences between groups of commodities and find that oil is the only distinctive one. High levels of oil dependence are even more likely to be associated with conflict than similarly high levels of dependence upon other commodity exports. Collier (2001) estimates that close to fifty armed conflicts active in 2001 had a strong link to natural resource exploitation, in which either licit or illicit exploitation helped to trigger, intensify, or sustain violence.

Ross (2003) also finds that resource abundance plays an important role as a cause of the conflict. He supports this argument by studying 13 different resource conflicts, mostly from Sub-Saharan Africa. Nevertheless, while oil, non-fuel minerals, and illicit drugs appear to influence conflict, other types of primary commodities – notably legal agricultural commodities – seem to be unrelated to civil war, at least in 13 cases studied. Resource abundance, however, does not have such a clear effect on the longevity of resource conflicts, according to Ross (2004). When it comes to oil, price increases would exacerbate a mix of "greed" and "grievances," increasing the likelihood of civil war, coup, or even foreign intervention through growing nationalism, allegations of corruption, or desire to capture a (greater) share of larger revenues (Le Billon, 2009).

In a study confined to African civil wars, Buhaug and Rod (2006) differentiate between territorial conflict that is more likely in sparsely populated regions near the state border – at a distance from the capital and without significant rough terrain – and conflict over state governance that is more likely to occur in densely-populated regions near diamond fields and close to the capital. The authors discover no indications of a systematic relationship between oil and gas installations and the location of civil war.

Similarly, natural resources in the conflict zone provide rebel groups with greater opportunities to loot these resources if they are easily accessible. Sufficient funding opportunities from abundant resources enable rebel leaders to procure arms and recruit belligerents with the aim of disempowering a government. The empirical results of Buhaug et al. (2009) and Lujala (2010) support the argument that the lootability (or accessibility) of natural resources increases the feasibility of insurgency and lengthens civil war duration. According to Lujala (2010), lootable resources – such as gemstones and secondary diamonds – and non-lootable resources – such as oil and natural gas – in conflict zones are strongly related to longer duration of conflict. Central governments very often inflict the violence experienced in resource-rich regions through a repressive apparatus. The local populations normally get less than 10% of what is left from resource rents, after corruption takes its share. After all, a majority of resource-dependent countries rank very high on the scale of corruption perception index, especially in Sub-Saharan Africa (Kurečić, Hunjet, Perec, 2014).

Collier and Hoeffler (2000) suggest that countries whose wealth is largely dependent on the exportation of primary commodities - a category that includes both agricultural produce and natural resources - are highly prone to civil violence. In explaining the correlation between the primary commodities and conflict, the authors argue that conflict may be explained either grievance - such as feelings of ethnic or political marginalisation - or by greed. They conclude that civil conflicts can be understood if the focus of study is on the greed mechanism of rebels and on the way in which natural resources are traded. The difficulty with this conclusion is that the relationship between commodities and conflict does not suggest either that rebels are greedy or that they finance their campaigns through trade in natural resources. The correlation could arise if conflict or expectation of conflict causes other economic activities - such as tourism and manufacturing - to cease, leaving only extractive industries to function (Bannon and Collier, 2003).

Fearon (2003) examines 128 civil wars that occurred in the period 1945 - 1999 and shows that rebel forces mainly obtain financial resources from contraband goods such as opium, cocoa, and gems, thereby prolonging the duration of war. Buhaug and Lujala (2005) and Regan and Aydin (2006) also find that gemstones and cocoa are related to longer wars. Fearon (2003) and other scholars conclude that the easy accessibility of resource wealth leads to a longer civil war, as it increases the feasibility of rebel activities. Since it is difficult for rebels to organise their own groups and continue an insurgency without adequate financing to procure arms and belligerents, wealth from abundant natural resources increases the feasibility of rebellion as it provides rebel leaders with sufficient funding.

Le Billion (2001) and Lujala (2005) indicate the importance of the lootable mechanism and the geographical characteristics of natural resources. Since resources are "natural", factors such as where they are mined, and the difficulty of production and transportation play a major role in determining if these resources are lootable. In order to provide rebels with the possibility of armed conflict, natural resources must be something that can be looted by rebel groups. Therefore, even if resources are abundant, they do not influence the duration of civil war if they cannot be or are difficult to be looted by rebel groups. On the other hand, because non-lootable resources are likely to be controlled by a government, such resources strengthen the power basement of government.

Keen (2000) argues that lootable resources can stimulate rebels' incentive or motivation for continuing civil war, as well as increase the probability of fighting. During conflict, individual rebels can more easily continue to commit criminal activities (looting or illegal commerce of spoils) in order to accumulate personal gains than they can during peaceful period. Rebels can initiate an insurgency against the government in order to obtain 'wealth'. In other words, conflict periods provide rebel groups with the incentive to prolong the duration of conflict (Addison, Le Billon; Murshed, 2002). Lujala (2010) interprets the result that lootable

resources are positively and significantly related to duration as evidence that rebels prefer the continuation of wartime to a decisive military victory or negotiated settlement (i.e., civil war termination). However, some studies show the results that natural resources are not related to civil war duration. Ross (2006) disaggregates oil and diamonds into offshore oil and onshore oil and primary diamonds and secondary diamonds on the basis of the resource lootability and finds that there is no statistically significant relationship between lootable or non-lootable resources and civil war duration.

Montalvo and Reynal-Querol (2010) also show that oil resources have a weak or no significant effect on the incentive of continuing an insurgence. Furthermore, Humphreys (2005) examines the effect of oil production and reserves and diamond production on the duration of civil war; he argues that natural resource production is related to shorter civil war. He interprets the results as implying that when the stronger side obtains natural resources, the duration of conflict becomes shorter than before and lengthens when the weaker side gains resource wealth. Humphrey's (2005) argument regarding the balance of power between rebels and the government indicates that when rebels or governments obtain resource wealth, they can strengthen their relative power – for example, by purchasing arms and recruiting soldiers – by obtaining resources, thereby changing the power equation in favour of the side that has greater access and control over natural resources. While lootable resources may increase the probability of rebels, non-lootable resources can reinforce the power of government. In essence, both lootable and non-lootable resources may have different effects on the onset and duration of conflict. Additionally, since resource wealth strengthens the side that controls and exploits natural resources, the relative capability between a government and rebel before conflict start also plays a significant role in duration and final outcomes.

In the last two decades, Sub-Saharan countries have experienced more resource-type conflicts (Elbadawi and Sambanis, 2000). These conflicts occasionally result in coups and regime change. Sudan experienced regime change conflict tied with oil, which finally resulted in South Sudan becoming a nation in 2011. Nigeria has also experienced violent internal conflicts that were quite evidently related to natural resources (Collier and Hoeffler, 2002). African economies are somewhat different with respect to culture and ethnicity when considering the nature of conflicts and resources. The majority of the countries also have high corruption rate index compared to other countries (World Bank, 2015). This approach was taken by Lujala, Gleditsch and Gilmore (2005), who study the effect of diamonds on the onset of conflict. They find evidence that secondary diamonds are linked to the onset of larger civil wars for the post-1985 period. They are not, however, able to control for whether the rebels had access to diamonds. The approach was also taken by Lujala (2010), who studies the effect of natural resources on conflict onset and duration and finds evidence that onshore oil production increases the risk of conflict onset.

Fearon (2004) is the first to code conflicts in which rebels are known to have exploited lootable resources. He finds that these conflicts tend to last substantially longer. However, he fails to account for cases where lootable resources are available in the conflict region but, for one reason or another, rebels do not exploit them (or there is no outside knowledge of exploitation). It is also possible that the conflict ended before the rebels could or need to utilise the natural resources. It is also possible that smuggled goods are involved in prolonged conflicts precisely because they are long, and the rebels are forced to exploit natural resources; use of natural resources may be merely an indication of prolonged conflict but not the cause. Ross (2006) states that, in many cases, the rebel groups do not begin to sell exploited goods until several years after the conflict started. Therefore, it would be more correct to identify all cases

in which rebels had access to lootable resources and investigate whether these conflicts last longer.

## 5.4 Research Questions and Hypotheses

Examining the relationship between natural resources and conflict is interesting both from an academic perspective – as there are still a lot of unanswered questions – as well as from a policy perspective. Understanding how natural resources influence conflict can contribute to understanding why resources sometimes go hand in hand with a healthy and wealthy democracy (as has arguably been the case in Botswana and South Africa), while in other cases they appear to coexist with infiltrating conflict (as in the Republic of Congo). Understanding the effects of natural resources – not just on conflict onset, but also on the duration – can help to contribute to creating policy initiatives to help build and maintain peace in Sub-Saharan Africa.

While the data and study of natural resources has developed over the last decade, no clear results have emerged on how natural resources influence conflict using only Sub-Saharan countries as case studies. This study goes further by empirically examining how natural resources – renewable and non-renewable – affect conflict onset. The argument is that natural resources impact on conflict indirectly through areas such: as resource scarcity or abundance; related ecosystems; ownership allocation; disagreement over the management of these resources; ethnic tensions; poor governance; political exclusion; and environmental factors. We also test if institutions reduce the risk of natural resource conflicts. By studying these shifts, this study seek answer the following questions:

1. Do natural resources cause the onset of conflict?

2. Does the type of natural resources matter in starting or prolonging a conflict

## Research Hypotheses

Recent studies by Cederman et al. (2011) and Collier and Hoeffler (2004) stress the role of grievances in promoting conflicts. The authors argue that contemporary research has focused almost entirely on the opportunity structure for conflict onset, that is, the opportunities available to either extort or finance a rebellion. However, grievances based on resentment may also cause rebellion. These resentments often happen when there are comparisons between groups – either between the elites and the opposition group or between different ethnic groups – due to resource rents inequality. Thus, grievances can facilitate mobilisation. Oil, gas and diamonds may produce systematic economic, political, and/or social inequalities between groups, such as the unequal distribution of oil rents, forced migration, environmental damage, and the loss of land rights (Ross, 2004).

These social disruptions are effective drivers for the recruitment of insurgents who want to fight for an apparently noble cause. Along with grievance, greed is often mentioned as a major facilitator of rebellion (Collier and Hoeffler, 2004).[44] According to Hoeffler (2011), greed can help groups to overcome the "free riding" problem by generating private incentives. Natural resources may provide these kinds of selective incentives that encourage participation in rebellion.

The promise of private returns – in the forms of immediate or future resource income – may motivate individuals to join in with the rebel cause. Humphreys and Weinstein (2008) argue that evidence from *Truth and Reconciliation Commission* suggests that Sierra Leone's

---

[44] Collier (2000) states, "the true cause of much civil war is not the loud discourse of grievance, but the silent force of greed." Although this might be important in some cases, it is impossible to tell the true intentions underlying the decisions or choice of actions of the rebels.

civil defence forces engaged in diamond trading in order to offer material benefits for their fighters. Humphreys and Weinstein (2008) also find that 'individuals offered money or diamonds were six times more likely to participate in the RUF." Participation in rebel activities may also be motivated by expectations about future income from resources (e.g. once key bodies managing resource revenues have come under the control of the insurgents). Also, countries that are dependent on natural resources may be more vulnerable to terms of trade shocks (Humphreys, 2005). This could cause instability and dissatisfaction within groups that suffer from these shocks. Therefore, it is expected that:

*H1: Grievances (as a result of inequality in natural resource rents) increase the likelihood of conflict onset.*

In addition to providing a motive for mobilisation in the form grievance, the Greed mechanism may be appropriate when resource rents generate income for the insurgents. Collier and Hoeffler (2004) argue that when gains from natural resources posit a higher value than the cost to obtain them, individuals will be persuaded to spend time and resources to acquire them. In other words, where resources are lootable and obstructable, individuals will seek to obtain them, an activity often denoted as "loot-seeking" behaviour. Collier and Hoeffler (2004) argue that due to being geographically fixed, lootable resources are easier appropriable than – for example – manufacturing, which can be relocated. What causes insurgency and conflict is thus viewed as mainly a matter of business opportunities rather than political motivation based on grievances. Fearon and Laitin (2003) also agree that greed – and the possibility of obtaining natural resources – can be a motivator for rebel groups, but argue contrary to Collier and Hoeffler that this works through bids to gain state control. In states with large amounts of resources, the value of capturing the state becomes larger, leading greedy rebels to take up arms against the government. Following on from Humphreys (2005), he argues that the "greedy rebels" mechanism can be examined by analysing if resource reserves significantly cause

148

conflict onset after controlling for production. If this is the case, he claims, this indicates that natural resources cause conflict onset through the "greedy rebels" mechanism. In line with this, the second hypothesis is as follows:

*H2: Lootable natural resources increase the likelihood of conflict onset.*

In situations where the resources are lootable and obstructable,[45] it could provide ethnic groups with the necessary financial means to acquire the essential resources for rebellion, such as weapons, know-how, logistic facilities, transportation, or military equipment. When resources are ''lootable'', rebels can extract and sell these themselves. By using the threat of kidnapping or blowing up pipelines, they may impose so-called "war taxes" on those who manage the resources.

In addition, internal violence can be financed by selling future rights to extract fuels. Ross (2004) highlights the role of "booty futures" in financing rebellion in countries such as Liberia, the Republic of Congo, and Sierra Leone. Having the chance to secure resources in future combats, insurgents are able to sell future mineral rights to foreign firms or neighbouring governments (Ross, 2004). For example, in the oil-rich Congo, a fierce power struggle emerged in 1997 between incumbent President Patrice Lissouba and former head of state Denis Sassou-Nguesso. Sassou-Nguesso, in particular, was able to draw on external support from Angola and France, the latter being keen to avoid Lissouba potentially selling oil licenses to US multinational companies and not French *Elf Aquitaine* (now *Total, Plc*), which had traditionally dominated the oil sector in the former French colony (Englebert and Ron, 2004). This suggests that conflict and its persistence require motivation and opportunity. Both ethnic diversity and natural resources can provide such conditions. While it is possible that ethnic fractionalisation

---

[45] Lootable resources are resources that are easily accessible to rebels and can be extracted for financial or welfare gains. Non-lootable resources cannot be extracted by rebels or other organised groups.

is a conflict risk on its own – particularly when based on politically relevant groups – there is the possibility that the combination of ethnic fractionalisation and natural resources further increases the risk of the onset of conflict between ethnic groups. Also, extraction of natural resources sometimes produces forced migration, which leads to environmental damage and loss of land rights (Humphreys, 2005). When this occurs, ethnic intolerance may develop leading to conflicts.

*H3: Increase in ethnic diversity increases the likelihood of conflict onset.*

Resource conflicts could escalate depending on several factors, including internal power struggles between government elites – or between elites and the rebels – or regional dominance ambitions. When resources are scarce or abundant, political instability makes countries much more vulnerable to conflict. The political instability influences not only the governance structure, but also all other infrastructures that depend on government control and oversight, such as national oil-production facilities, highways, and ports (Kahl, 2006). Population growth, environmental degradation, and resource inequality can combine to weaken an already unstable government capacity to address the needs of the populace, thus fuelling conflicts. These conflicts can often result in destruction of the environment and infrastructure, increasing the scarcity of resources and, in turn, further increasing the potential for violent conflict or the duration of conflict (Gleditsch, 2007).

Conflicts also often destroy infrastructure – such as pipelines or oil fields – and decrease productivity of mining, thus furthering the downward spiral in economies affected by conflict. Furthermore, poor management of resources could accelerate the economic decline of a country. Societies involved in conflict may find that governments, businesses, and other groups have sometimes profited by the instability of a government, thereby engaging in illegal sale or control of natural resources. Resource capture by powerful groups leads to an increase in the

wealth gap between the elites and marginal groups. This gap not only causes grievances among the local population, but also increases the vulnerability of the most disadvantaged people and groups. This leads to the next hypothesis:

**H4**: *Political instability (level of democracy) increases the duration of conflict.*


## 5.5 Methodology, Data and Variables

Earlier studies of the relationship between natural resources and conflicts have arrived at different and often contradicting results. This is partly due to different methodological approaches employed by different scholars. The difference in approach has been mainly due to the difficulty in establishing a common mechanism through which natural resources impact on conflict. One or more of the mechanisms could also be operating at the same time.

The model in this study follows the work of Reuveny and Maxwell (2001). In their model, it is assumed that there are two groups of population sizes $N_1(t)$ and $N_2(t)$ in period *t*. Each group can access the same natural resource. It is assumed that each group also gets resource rents allocated to them. In this model, parties fight over natural resources not only because of greed or grievance, but also for the ability to invest their spoils for financial gains both in the present and future. The duration of the conflict is affected by factors such as international organisations involved in the country or future financial gains if the conflict is ongoing; that is the *International Conflict Premium mechanism,* where pressure from third parties can impact on conflict duration. Shelter, manpower, weaponry, and financial support could be given to either of the groups, potentially putting an end to the conflict or prolonging it, depending on the optimal benefit that the third parties intend to achieve during these conflicts.

Furthermore, the groups that benefit the most during conflict may prefer to keep fighting than to win because of the gains of ongoing conflict; the group therefore acts as a spoiler to peace processes and resists any peace agreement. The military base of a country could also affect the duration of conflict. In this case, if the other group is the government and the military is acting on its behalf, it is essential that the military is fully equipped to deal with the rebels and take territorial powers over the natural resource. Several mechanisms – both direct and indirect – that determine the relationship between natural resources may work simultaneously (Lujala, 2010). It is somewhat accepted that natural resource dependence and exportation are related to conflict onset (Fearon and Laitin, 2003; Humphreys, 2005; de Soysa and Neumayer, 2007). It is therefore difficult in empirical analysis to distinguish the different mechanisms linking natural resources to conflict. There are only a few choices to measure the resource base of a country; the most widely used measures commonly take the export value of natural resources or specific resource type and standardise it with respect to the size of the economy or total exports (Ross, 2004). Others use rent estimates instead of export value (de Soysa and Neumayer, 2007). These measures are used either directly or with a dummy created for countries that score above a specific cut-off point.

## 5.5.1 Discrete Choice Models (DCM)

In order to have a clear understanding of the relationship between resources and conflict in Sub-Saharan Africa, it is important to employ a robust method of research. The study uses the logistic regression models. The DCM models analyse data that represents either a decision or a choice. Extant literature assumes that the variable $y_i$ is a continuous random variable. However, with discrete choice models, the dependent variable can be limited. Two separate models can be generated from the limited variation of the dependent variable. They are the *discrete dependent model* and the *continuous dependent model*. The discrete dependent variables have

the discrete choice models and the Duration (hazard) model, while the continuous dependent variable has the truncated censored models.

To model discrete choice models, a discrete variable $y$ is observed and a set of variables is connected with the decision $x_i$. The model highlights the fundamental choice problem and how to maximise utility for each individual. Sometimes it is a single choice, then the data is binary, with '1' representing a decision to do something, while '0' represents a decision not to do something, or there could be several choices to choose from. Then the data may come as 1, 2,...$J$, where $J$ represents a number of choices. An individual will make a decision based on available information and the choice that gives maximum satisfaction.

### *Discrete Dependent Variable*

The two standard binary outcome models are the logit model and probit model. The models specify different functional forms of predicting the probability of participation in a given situation as a function of regressors. The models are fit by maximum likelihood (ML); sometimes a linear probability fit by ordinary least squares (OLS) is also used. The dependent variable $y$ takes only two values.

Y = '1' with probability $p$ or '0' with probability of $1 - p$. Given that $p$ is a function of regressor $x$, the outcome values are set to 1 and 0.

The probability mass function for the observed outcome $y$ is $p^y(1-p)^{1-y}$ with $E(y) = p$ and

$$Var(y) = p(1-p) \tag{5.1}$$

A regression model can be designed by $p$ being dependent on an index function $x'\beta$, where $x$ is a K x 1 regressor vector and $\beta$ is a vector of unknown parameters. In these models, the conditional probability usually takes the form:

$$p_i \equiv \Pr(y_i = 1 \mid x) = F(x_i'\beta) \tag{5.2}$$

153

where F(.) is a specified parametric function of $x^{'}\beta$, this ensures that the bounds $0 \le p \le 1$ are satisfied. The four commonly-used functional forms of $F(x_i^{'}\beta)$ are logit, probit, linear probability, and complementary log-log forms.

As conflict onset is a dichotomous variable, the logistic regression is applicable. When dealing with count dependent variables, most of the techniques derived from regular linear regressions become unsuitable (Hosmer and Lemeshow, 2000; Powers and Xie, 2008). Hence, special techniques are required for regression analysis of dichotomous dependent variables. Logistic regression is among the more developed and most widely used techniques for estimating models with dependent binary variables (Long and Freese, 2006).

In other words, logistic regressions are therefore appropriately suited for this analysis. Likewise, the quantitative literature on natural resources and conflict has mainly used logistic regression models. While logistic regression is not the only technique suited to analyse count variables, the flexibility and robustness it provides makes it useful for the purposes of this study.[46] Additionally, analysing the different mechanisms through interaction effects is fairly straightforward in logistic regression (Hosmer and Lemeshow, 2000). Therefore, logistic regression appears to be a well-suited method of approach for studying the relationship between natural resources and conflict onset.

## 5.5.2 Duration (Hazard) Model

Hazard-based duration models characterise a set of analytical methods that are appropriate for modelling data and have as their focus an end-of-duration occurrence, given that the duration has lasted for some specified time (Hensher and Mannering, 1994; Kiefer, 1988). This concept

---

[46] Other methods of analysis are the Cox model, Weibull model, and the rare events analysis.

of conditional probability of an end to duration recognises the dynamics of duration; that is, it recognises that the likelihood of ending the duration depends on the length of elapsed time since the start of the duration.

There are two important features of the duration data: first, it is possible for the data to be censored in one form or the other; second, that exogenous determinants of the event times characterising the data may change during the event spell. The hazard-based approach to duration modelling can accommodate both of the distinguishing features of duration data – that is, censoring and time-varying variables – in a fairly simple and flexible method. The hazard function could be explained mathematically by taking a non-negative random variable $T$ representing the duration time. $T$ may be continuous or discrete. For the purposes of this study, we focus on a continuous T. The hazard at time $u$ on the continuous time period $\lambda(u)$ is defined as the probability that the duration under study will end within a small time period $h$ after time u, given the duration has not elapsed until time $u$. A detailed mathematical definition for the hazard in terms of probabilities is:

$$\lambda(u) = \lim_{h \to 0^+} \frac{\Pr(u \leq T < u + h \mid T > u)}{h} \tag{5.3}$$

This definition makes it possible to relate the hazard to density function $f(.)$ and cumulative distribution function $F(.)$ for $T$. Subsequently, the probability of the duration ending in within a small time period $h$ after time $u$ is given as $f(u)*h$ and the probability that duration does not end before time $u$ is $1-F(u)$. The hazard rate can therefore be written as:

$$\lambda(u) = \frac{f(u)}{1 - f(u)} = \frac{f(u)}{S(u)} = \frac{dF/du}{S(u)} = \frac{-dS/du}{S(u)} = \frac{-dInS(u)}{du} \tag{5.4}$$

where $S(u)$ denotes the endurance probability or the survivor probability. This represents the probability that the duration did not end prior to $u$, that is, the duration ended at the appropriate

time $u$. The shape of the hazard function, therefore, has implications to the dynamics of the duration. It is possible to adopt a parametric shape or a non-parametric shape. For this study, the focus is on the parametric shape.

*Parametric Shape*

The parametric shape takes the continuous time form $\lambda(u) = \sigma$ for all $u$, where σ is the constant hazard rate. This implies that there is no duration dependence or dynamics; the conditional exit probability from the duration is not associated to the time passed since start of the duration. The constant-hazard assumption corresponds to an exponential distribution for the duration distribution. A generalisation of the constant-hazard assumption is a two-parameter hazard function, which results in a Weibull distribution for the duration data. The hazard rate in this case allows for monotonically increasing or decreasing duration dependence and is given by:

$$\lambda(u) = \sigma\alpha(\sigma u)^{\alpha-1}, \qquad \sigma > 0, \alpha > 0$$

The type of the duration dependence is based on the parameter α. If $\alpha > 1$, then there is positive duration dependence (suggesting a "snowballing" effect, where the longer the time has elapsed since start of the duration, the more likely it is to exit the duration soon). If $\alpha < 1$, there is negative duration dependence (suggesting an "inertial" effect, where the longer the time has elapsed since start of the duration, the less likely it is to exit the duration soon). If $\alpha = 0$, there is no duration dependence (which is the exponential case). The Weibull distribution allows only monotonically increasing or decreasing hazard duration dependence. However, a distribution that permits a non-monotonic hazard form is the log-logistic distribution. Several other parametric distributions may also be adopted for the duration distribution, including the Gompertz, log-normal, gamma, generalised gamma, and generalised F distributions (Hensher

and Mannering, 1994; Lancaster, 1990; Kalbfleisch and Prentice, 2002). This study does not go into detail in explaining these methods, as it is out of the scope of the study.

To analyse the effect of natural resources on conflict duration, it is important to consider exogenous factors that may influence this relationship. Incorporating exogenous factors or external covariates into the hazard models usually involves two parametric forms; they are the proportional hazards form and the accelerated form. These parametric forms accommodate the effect of the covariates on hazard at any time $u$.

The *proportional hazard form* specifies the effect of external covariates to be related to an underlying hazard function:

$$\lambda(u, x, \beta, \lambda_0) = \lambda_0 \theta(x, \beta), \qquad\qquad (5.5)$$

where $\lambda_0$ is a baseline hazard, $x$ is a vector of explanatory variables and $\beta$ is a corresponding vector of coefficients to be estimated. In proportional hazard models, the effect of external factors is to shift the entire hazard function either up or down, but the hazard function profile remains the same for every country.

The second parametric form − known as the accelerated form − assumes covariates rescale time directly. There are two types of accelerated forms: a) the accelerated life time effect and b) the accelerated hazards effect. In the accelerated lifetime models, the probability that the duration will go beyond time $u$ is given by the baseline endurance probability function. This endurance probability is also a function of external covariates, otherwise known as external factors. The role of the external factors is to accelerate (or decelerate) the termination of the duration period. In the accelerated hazard effect models, the effects of the covariates are such that the hazard rate at time $u$ is given by the baseline hazard rate calculated at a rescaled time value (Chen and Wang, 2000). The difference between the accelerated lifetime models and the accelerated hazard effect is that, in the former, the covariates rescale time in the

157

endurance probability function; in the latter, the covariates rescale time in the underlying hazard function.

## 5.5.3 Data and Variables

In order to investigate the relationship between natural resources and civil conflict onset, data from UCDP/PRIO Armed Conflict Data (ACD) is used to identify civil conflict in Sub-Saharan Africa for the period 1980 - 2016.[47] This dataset is preferable to others for two main reasons: first, the data consists of information about the onset and duration of each government-rebel dyad; second, the dataset is arguably the most robust and comprehensive conflict dataset and well suited to studying the relationship between natural resources and conflict. As highlighted by Nathan (2005), the availability of data in developing countries remains a major concern when studying conflict; since conflict mostly occurs in these countries, accurate data such as GDP, population, income are often lacking (Nathan, 2005).

### Dependent Variables

### Conflict onset

The dependent variable is civil conflict onset. This is defined as an intrastate conflict in which at least 25 battled related deaths (civilian and military) occurred per year. Civil conflict onset is coded from the UCDP/PRIO Armed Conflict Dataset and covers the period 1980 - 2016. The dataset includes Sub-Saharan African countries with simultaneous civil conflicts. For example, Republic of Congo had several ongoing conflicts in the 1990s, with six conflict onsets in total.

---

[47] Civil conflict is here taken to mean organized armed conflict between collective actors within a sovereign state.

*Conflict Duration*

The duration is measured in days, although the year is kept as the observation unit because no other variable is measured for a shorter period. A recurrence of a conflict that has been inactive for more than two calendar years is treated as a new conflict. A new conflict is also coded if there has been a total change in the opposite side.

*Explanatory Variables*

For the purposes of this chapter, natural resources have been classified as: Oil, Solid Minerals and Land.

***Land*** could be said to be the most important natural resource in Africa (Alao, 2007). Consequently, every society in Africa sees land as a natural resource that is held in trust for future generations, and this trust lies behind most of the conflicts over land in the continent. What further makes land essential to conflict literature is that it is the habitat of most other natural resources, a characteristic that means the controversies surrounding these resources often manifest through conflicts over the ownership, management, and control of land.

Conflicts over land can be summarised as clashes among "groups" for "spaces." "Groups" in this context come in different forms: ethnic or racial groups; local communities; nation-states; professional groups such as pastoralists and agriculturists; gender; or age groups. "Spaces" are defined as the geographical boundaries within which these groups have to compete for coexistence. The argument on conflicts over land in Africa are rooted in the inability of the government to manage the conflicting legacies left by the different land tenure practices that have existed in the continent over the precolonial, colonial, and post-independence periods, and the determination of governments and political elites to ensure effective grip over the ownership and control of land (Alao, 2007).

Natural resources – such agricultural and arable land – are not commonly used in literature on how it impacts on conflict onset or duration. In recent years the concentration of natural resources has been towards diamonds (Humphreys, 2005; Lujala, 2010).

*Agricultural land* in the data is the percentage of land area; it is referred to as the share of land area that is arable, under permanent crops and under permanent pastures, that is, land that can be used for agricultural purposes. Land constitutes a basic productive resource to the people of Africa. In Ghana, contestation over land is particularly acute and seems likely to intensify over time. The pressures of population growth, cash-crop led marketisation, large scale migration, and rapid urbanisation have produced increased competition; land scarcity has resulted in increasing politicised conflicts over land (Yelsang, 2013). Therefore, whether as a resource to a nation, urban, or rural area, land requires careful management for the maximisation of benefits derived from its utilisation (Bebelleh, 2007). Amanor (2006) states that land as a natural resource is acknowledged as part of the property that belongs to the people in a particular community or district. In other words, most conflicts in SSA are motivated by land laws and territorial jurisdiction over a particular land area. As a communal property resource, it is considered the economic, social, and political backbone of their survival as a people.

*Oil* as a natural resource is argued to influence the resource conflicts in most nations (Besley and Pesson, 2009; Klare, 2001; Yu-Hsiang and Michaels, 2014). Oil could have the capacity to induce the onset of conflict or serve as a catalyst in affecting the duration of conflict. Klare (2001) projects that resources such as water, diamonds, minerals, and oil are mostly likely to be fought over; this analysis by Klare highlights the problem of the resource curse. Oil is a valuable natural resource and, over the years, countries that possess oil as a natural resource have protected this asset. The competition for accessing the natural resource has also increased

due several factors such as greed, grievance, and booty futures (Collier and Hoeffler, 2004; Le Billion, 2001; Humphreys, 2005; Ross, 2005).

In examining oil's influence on conflict onset, this study examines oil as the country's primary export commodity. In addition to the arguments supporting the position that the oil can act as a catalyst capable of contributing to the onset of conflict, another area of literature presents a set of theories arguing the potential role oil serves as a variable capable of affecting the duration of a conflict. The general notion guiding this type of resource conflict literature is that because oil is a valuable – and strategically in demand – commodity resource, it can be sold for significant amounts of money, generating considerable rents. Whoever is capable of accessing those oil rents, theoretically, has at their disposal a significant level of wealth.[48] Rents from oil can lengthen the duration of conflict if they are used to finance armed groups, whether they are the national military or an organised rebel group (Humphreys, 2005).

Oil as a natural resource could also prolong the duration of conflict if it is auctioned as a "booty future". The term "booty futures" was developed by Ross (2005), who argued those booty futures – or selling of future exploitation rights of natural resources – contribute to the duration of the conflict. In this situation, the owners of the natural resource (oil) – which is usually the state – will sell the future rights of the resource to a buyer. This usually goes to the highest bidder. Depending on the specifications of the agreement, the highest bidder wins the right to explore, extract, produce, and sell the derived oil. It could also be argued that if oil is lootable, it will increase the onset or duration of conflict. In this case, it generates significant amount of revenue to the looters, which can be used to finance a conflict or to accumulate wealth. This hypothesis is tested by examining the onshore and offshore production of oil and how this affects conflict onset and duration.

---

[48] Because oil is a valuable natural resource and internationally demanded as well, it is likely that the resource rents will continue to enrich whoever controls or 'owns' the right to the oil as it is consistently pumped, produced, and exported over several years. Oil as a natural resource is therefore a consistent source of income.

*Solid Minerals* have, in recent years, been considered to fuel conflicts, especially in African countries (Lujala, 2010). Several recent studies of civil war argue that natural resource endowment is a factor that facilitates and even generates conflict (Berdal and Malone, 2000). Some of these studies claim that resource abundance is a more important factor in civil conflict than resource scarcity (de Soysa, 2000). Collier and Hoeffler (2004) posit the contrast of *greed* versus *grievance*, where *greed* refers to rebels initiating conflicts in order to maximise their personal income through wartime looting of resources such as diamonds, gemstones and other minerals. Other versions of this argument speak of *economic opportunity*, or how resource abundance may fuel rebellion regardless of initial motivation or ideological justification.

The civil wars in Sierra Leone, Liberia, the Democratic Republic of Congo (Zaıre), and Angola seem clearly to have been fuelled by the sale of "conflict diamonds" (Olsson, 2007). It has been argued that access to wealth from diamond mining was critical to the expansion of the *Revolutionary United Front* in Sierra Leone in the early 1990s (Weinstein, 2005). These and other brutal civil wars in the 1990s – in which solid minerals seem to have played a central role – have emphasised how solid minerals can provide economic opportunity for conflict. Solid minerals have also been known to fuel ethnic and land ownership conflict. If minerals are identified to be on a particular land, this sometimes leads to conflict over who has right ownership to the land.

Ross (2004) argues that case study evidence supports the concept of availability of lootable natural resources facilitating rebel effort once a conflict has started. Diamonds are especially known to cause conflict onset. This is because of the associated wealth related to diamonds. In analysing solid minerals as an explanatory variable, the variable is decomposed into diamonds, natural gas, gold and other precious metals. This is to take into account if there are any difference in these natural resources and how they impact on conflict onset.

The chapter also considers the effects of aggregated natural resource rents on conflict onset. This is measured by using the total resource rents as a percentage of GDP. Other explanatory variables used are ***mineral rents***, which is difference between the value of production for a stock of minerals at world prices and their total cost of production. Minerals included are tin, lead, zinc, copper, iron, silver, bauxite, and phosphate. ***Oil rents*** are the difference between the value of crude oil production at world prices and total cost of production. ***Coal rents*** signify the difference between the value of both hard and soft coal production at world prices and their total cost of production. ***Total reserves*** comprise holdings of monetary gold, special drawing rights, and holdings of foreign exchange. These variables are included in the analysis to examine if natural resource wealth causes the onset of conflict. Collier (2000a) stated that resource-wealthy nations are at a higher risk of conflict onset because of motive and opportunity by rebel organisations. Motive is the private gain or greed that can be attained from exploiting the resource and the opportunity is the finance available to fund a large rebel organisation through lootable resources. The finance provided by natural resources might explain the long duration of civil wars, even in cases where the start of conflict had nothing to do with natural resources and might have instead been caused by a 'grievance'. Unequal distribution of natural resource rents may also create severe grievances, especially if a region with abundant natural resources is deprived of revenue flows while still bearing extraction costs such as pollution and degradation of land (Lujala, 2010).

*Control Variables*

Several factors affect the onset of conflict and its duration. The control variables considered that can predict the characteristics of a country are: ***economic performance***; ***population size***; ***level of democracy***; ***forest area; linguistic fractionalisation; Gini coefficient; percentage of***

***country covered in mountains; percentage of countries covered in forest*; and *ethnic heterogeneity*.**

To control for economic performance, growth in GDP per capita income is included in the empirical analysis. It is argued that countries with a higher level of economic development indicate higher opportunity costs of rebellion. GDP per capita income is expected to have a negative impact on civil war duration. Population size is included in the analysis and may be positively related to duration. The level of democracy in a civil war country may have significant influence on the dynamics of civil war duration and onset. The Polity democracy-autocracy scale is adapted to measure the level of democracy during civil war. The forest area is expected to benefit the rebels, for example, by providing hiding places, thus increasing the length of conflict.

To control for social fractionalisation, data is extracted from Lujala's (2010) data on linguistic fractionalisation, which gives the probability that two randomly selected individuals are not from the same linguistic group. The measure varies between 0 and 1, 1 indicating a totally heterogeneous country. The degree of social heterogeneity could impact on democracy, which would indirectly cause a conflict onset. The Gini coefficient measures income inequality. Cramer (2003) states that is almost a universal assumption that an inequitable distribution of resources and wealth will provoke violent rebellion. Nafziger and Auvinen (2002) use a Gini coefficient measure of inequality, applied to data from Deininger and Squire (1996) widely seen as the most reliable available data on inequality. This analysis explicitly claims that the evidence supports "objective grievances" contributing to war and humanitarian emergencies. Rough terrain is also expected to benefit the rebels, thereby lengthening the conflict duration. Finally, in order to control for ethnic diversity, the ethnic fractionalisation index is employed, which is measured by the probability that two randomly chosen persons in a country belong to different ethnic groups, and ranges between 0 and 1.

## 5.5.4 Descriptive statistics

**Table 5.1 Summary Statistics (1980-2016)**

| Variable | Observation | Mean | Std. Dev | Min | Max |
|---|---|---|---|---|---|
| War | 1477 | 0.61 | 0.488 | 0 | 1 |
| Gas production | 1568 | 0.087 | 0.282 | 0 | 1 |
| Oil production | 1568 | 0.286 | 0.452 | 0 | 1 |
| Oil reserves | 1554 | 0.294 | 0.456 | 0 | 1 |
| Oil rents (% of GDP) | 793 | 7.016 | 13.484 | 0 | 60.452 |
| Diamond Production | 1597 | 0.402 | 0.490 | 0 | 1 |
| Democracy score | 1568 | 4.632 | 2.99 | 0 | 10 |
| GDP per capita | 1513 | 0.835 | 6.458 | -50.23 | 91.648 |
| Ethnic Fractionalisation | 1568 | 0.649 | 0.236 | 0.0355 | 0.925 |
| Total Reserves, log | 1321 | 19.216 | 1.996 | 12.498 | 24.694 |
| Mineral rents (% of GDP) | 1480 | 1.871 | 4.871 | 0 | 44.644 |
| Gas rents (% of GDP) | 757 | 0.044 | 0.17 | 0 | 1.88 |
| Population, growth | 1603 | 15.799 | 1.253 | 12.791 | 19.041 |
| Forest rent | 1480 | 7.011 | 7.761 | 0 | 74.73 |
| Coal rent | 1392 | 0.148 | 0.594 | 0 | 7.852 |
| Landarea, log | 1578 | 12.399 | 1.617 | 7.616 | 14.681 |
| Agricultural land | 1492 | 48.267 | 18.815 | 7.938 | 82.671 |
| Arable land | 1492 | 12.325 | 12.307 | 0.043 | 49.261 |
| Resource rents | 1480 | 12.80253 | 12.469 | 0 | 82.589 |
| Linguistic fractionalisation | 1531 | 0.678 | 0.241 | 0.020 | 0.923 |
| Ongoing war | 1009 | 0.214 | 0.410 | 0 | 1 |
| ***Duration Analysis*** | | | | | |
| Oil discovery | 526 | 0.255 | 0.436 | 0 | 1 |
| Oil production | 526 | 0.226 | 0.419 | 0 | 1 |
| Gas discovery | 526 | 0.348 | 0.477 | 0 | 1 |
| Gas production | 526 | 0.023 | 0.149 | 0 | 1 |
| Forest area | 507 | -3.141 | 2.531 | -11.343 | -0.199 |
| Gini coefficient | 1504 | 44.908 | 8.643 | 28.9 | 65.76 |
| Linguistic fractionalisation | 496 | -0.433 | 0.751 | -3.425 | -0.08 |
| All gemstone pro. | 526 | 0.409 | 0.492 | 0 | 1 |
| % of country covered in mountains | 1568 | -3.932 | 2.565 | -6.908 | 12.685 |

*Dependent Variable:* Armed conflict is the dependent variable which is measured by a binary outcome of either 0 if no conflict occurred in that year or 1 if a conflict occurred, with the mean given as 0.6; this indicates a considerable high amount of conflict in the region. The conflict variable is defined as the occurrence of armed conflict in a given country in a given year.

*Independent variables:* Oil production occurred in 22% of country-years in the period. The average amount of oil production is 28% and standard deviation is 0.45, which shows variation across the mean. Gas production is an average mean of 8%, which indicates low gas production in Sub-Saharan Africa. This supports the statistics for gas rents as the average mean is 4% and a standard deviation of 0.17. Oil rents as a percentage of GDP has a low observation, as there are more non-oil producing countries in the region. However, mineral rents have a larger observation, suggesting more countries in the region have solid minerals that are being exported. Gas rents maximum value is about 2% of GDP; this supports gas production average mean.

*Control Variables*: The ethnic fractionalisation index has a mean of 0.65, with a standard deviation of 0.24. The average polity score – represented as political stability – has a negative average, suggesting countries in the region have values between 0 and -10. The polity score index takes a value between -10 to 10, but it has been scaled up to between 0 and 10.

Growth rate of GDP per capita has a mean of 0.84, with the minimum number being negative 50% from Liberia in 1990, while the maximum number of 91% is also from Liberia. The standard depreciation of 6.5 shows a large dispersion around the mean. Population growth has a mean of 2.7% and a standard deviation of 1. The country with the least population growth is Rwanda; this is probably due to the civil war and genocide experienced in the country in the 1990s.

## 5.5.5 Empirical Models

The empirical model for *conflict onset* takes the following form:

$$C_{it=} f(X_0) \tag{5.6}$$

where conflict is a function of $X_0$ variables. This is a global variable that consists of the independent and control variables. The independent variables are oil production, gas production and diamond productions (*DIAP*). These variables independently could cause an incidence of conflict through the mechanism discussed in Section 5.3. The control variables are population growth (*POP*), GDP per capita growth (*GDP*), percentage of country covered in mountains (*PCM*) and ethnic fractionalisation (*EF*)

The basic regression model is therefore as follows:

$$OnC_{it=} \beta_0 + \beta_1 Oilp_{it} + \beta_2 Gasp_{it} + \beta_3 Diap_{it} + \beta_4 Oilres_{it} + \gamma_5 GGDP_{it} + \gamma_6 Pop_{it} +$$

$$\gamma_7 EF_{it} + \gamma_8 PCM_{it} + \varepsilon_{it} \tag{5.7}$$

Renewable natural resources and resource rents in relation to conflict behaviour are often appropriated to a grievance mechanism (Collier and Hoefller, 2005; Humphreys, 2005). The scarcity of renewable natural resources can affect everyone in the society equally, but scarcity can also be structural, which is caused by the policy of a state. When scarcity is structural, it has the potential to be used against opponents of the state. An example of this is a policy that makes ownership of water rights or farmlands illegal for a certain group. This group is now deprived of one of the necessary elements of life. This sort of deprivation is a grievance, which can lead to conflict onset.

Ross (2004) suggests that agricultural commodities may cause onset of conflict if there is resource degradation occurring in the country. In studying the effects of resource degradation on conflict, Homer-Dixon (1994, 1999) and Klare (2001) each point out the negative effects of resource degradation on the welfare of a society. Homer-Dixon particularly notes the causal relation of resource degradation to conflict onset. These scholars have also focused on renewable natural resources as sources of conflict. Of the renewable natural resources considered by scholars studying the relationship with conflict, freshwater, arable land, agricultural land and forested land are often considered to have a strong relationship with conflict (Baechler, 1998; Hauge and Ellingsen, 1993; Ross, 2004).

Countries dependent on primary commodities and resource rents are also at a high risk of experiencing conflict. Reliance on primary commodities is generally associated with a large share of location-specific "rents" in national income. In turn, rents are associated with large nontax income for the state or any other organisation that can control the territory on which the rents are generated. Reliance is also associated with exposure to shocks; the global prices of primary commodities are much more volatile than other prices and this is compounded by quantity shocks due to climate, discoveries, and exhaustion. These shocks may involve volatile growth rates and difficulty in managing the economy; these factors can confuse citizens' comprehension of government performance. Natural resource rents could create multiple routes that may be linked to the risk of conflict. Large resource rents are not intrinsically a curse. They obviously have the potential to accelerate peaceful development and this potential has occasionally been realised, as in Botswana. On the other hand, resource rents cause conflict onset or prolong conflict, for example in Nigeria, where resource rents have been a cause of conflict in the country. There is also the argument of poor management of natural resources and corruption of resource rents in developing countries (Herdiansyah et al., 2014). To examine

if resource rents and renewable natural resource increases the risk of conflict onset, Equation 5.8 below is estimated:

$$OnC_{it} = \alpha_0 + \alpha_1 TR_{it} + \alpha_2 LA_{it} + \alpha_3 FR_{it} + \alpha_4 MR_{it} + \alpha_5 FA_{it} + \varphi_6 AGL_{it} + \varphi_7 INQ_{it}$$
$$+ \varphi_9 DEM_{it} + \varepsilon_{it} \qquad\qquad (5.8)$$

where *TR* is *total reserves, LA* is *Land area, MR* is *Mineral rents, FA* is *Forest area in the country, AGL* is *Agricultural land, INQ* is *GINI coefficient, and DEM* is *Democracy score variable*. Control variables from Equation 5.7 are also included in the analysis.

*Duration Analysis*

The empirical analysis uses conflict data for the period 1970 - 2016 from the annually updated UCDP/PRIO Armed Conflict. The dataset has a relatively low inclusion criterion (25 battle-related deaths during a year). Therefore, low-intensity conflicts are included in the analysis. The duration is measured in days, although the year is kept as the observation unit because no other variable is measured for a shorter period. Conflicts that were active in 2016 are censored as having ended 31st December of the year recorded as having 25 battle related death. A reoccurrence of a conflict that has been inactive for more than two calendar years is treated as a new conflict. A new conflict is also coded if there has been a total change in the opposite side. In total, dates are available for 61 distinct conflicts for the period 1970 - 2016.

The estimated duration model takes the following form:

$$DurC_{it} = \beta_0 + \beta(oilproduction_{it} + gasproduction_{it} + diamondproduction_{it}$$
$$+ democracy_{it} + intensity_{it}) + \varepsilon_{it} \qquad\qquad (5.9)$$

The regression analysis above argues that the duration of conflict is affected by natural resources and other control variables such as level of democracy, forest area, and the intensity of conflicts. There are other factors that could affect the duration of conflicts, but for the purposes of this study, the control variables have limited to these four.

## 5.6 Discussion of Estimated Results

### 5.6.1 Conflict Onset Analysis

The onset analysis studies whether natural resources contribute to conflict onset. Table 5.2 below presents the results. The results are shown in coefficients and odd ratios for logistic regressions; this provides an easy interpretation of independent variables, which are mostly dummy variables.[49] The resource curse literature suggests that countries with natural resources become poorer because of the natural resources they have, especially developing countries with crude oil (Gelb, 1988; Sachs and Warner, 1995; Humphreys et al., 2007; Sachs, 2007; Kim and Lin, 2015). These countries tend to fight more conflicts, which may be due to factors such as low opportunity cost of joining a rebellion (Collier and Hoeffler, 2004) or low state capacity (Fearon and Laitin, 2003). The level of democracy has been shown to be related to conflict onset in a parabolic way (Lujala, 2010); the most autocratic and democratic states are less likely to experience a conflict onset, while governments that have characteristics of both types have more conflict onsets (Herge et al., 2001). Other control variables included in the analysis are population size, percentage of mountainous terrain in the country, growth rate of GDP per capita and ethno-linguistic fractionalisation.

---

[49] The odds ratios show how many times the risk of conflict increases for one unit of change in the independent variable.

**Table 5.2 – Onset of armed conflict, 1980 – 2016**

| VARIABLES | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 |
|---|---|---|---|---|---|
| Oil prod. | 1.487*** | 1.586*** | 0.506** | | |
| | [4.426] | [4.884] | [1.659] | | |
| | (0.261) | (0.28) | (0.225) | | |
| Gas prod. | -4.275*** | -4.300*** | | -4.162*** | |
| | [0.014] | [0.014] | | [0.016] | |
| | (0.662) | (0.674) | | (0.645) | |
| Diamond prod. | -0.771*** | -0.547** | -0.388* | -0.404* | -0.343 |
| | [0.462] | [0.579] | [0.678] | [0.668] | [0.710] |
| | (0.233) | (0.255) | (0.211) | (0.223) | (0.21) |
| Population, log | 0.379*** | 0.221* | 0.239** | 0.309** | 0.225** |
| | [1.460] | [1.248] | [1.270] | [1.362] | [1.253] |
| | (0.121) | (0.129) | (0.104) | (0.124) | (0.107) |
| GDP per capita | -0.072*** | -0.068*** | -0.057*** | -0.085*** | -0.055*** |
| | [0.931] | [0.934] | [0.945] | [0.919] | [0.947] |
| | (0.016) | (0.018) | (0.015) | (0.017) | (0.015) |
| Linguistic fractionalisation | 2.651** | 5.277*** | 3.697*** | 3.065*** | 4.295*** |
| | [14.17] | [195.7] | [40.32] | [21.43] | [73.33] |
| | (1.211) | (1.438) | (1.161) | (0.57) | (1.231) |
| % of country covered in mountain | 0.373*** | 0.454*** | 0.299*** | 0.262*** | 0.296*** |
| | [1.452] | [1.575] | [1.348] | [1.300] | [1.344] |
| | (0.060) | (0.068) | (0.053) | (0.054) | (0.053) |
| Polity (democracy score) | 0.103*** | 0.165*** | 0.071** | 0.033 | 0.062* |
| | [1.108] | [1.179] | [1.074] | [1.034] | [1.064] |
| | (0.038) | (0.043) | (0.035) | (0.040) | (0.035) |
| Ethnic fractionalisation | -1.041 | -1.691 | -2.638** | -2.334*** | -3.020** |
| | [0.353] | [0.184] | [0.072] | [0.097] | [0.049] |
| | (1.243) | (1.382) | (1.188) | (0.821) | (1.237) |
| Inequality coefficient | | -0.030** | | | |
| | | [0.971] | | | |
| | | (0.015) | | | |
| Gas reserves | | | | 1.835*** | |
| | | | | [6.263] | |
| | | | | (0.251) | |
| Oil reserves | | | | | 0.443** |
| | | | | | [1.557] |
| | | | | | (0.220) |
| Constant | -7.315*** | -5.108** | -5.006*** | -6.025*** | -4.983*** |
| | (1.914) | (2.189) | (1.635) | (1.856) | (1.663) |
| Observations | 769 | 739 | 769 | 769 | 769 |
| Log likelihood | -309.194 | -268.458 | -349.265 | -297.841 | -349.738 |

The table shows the odds ratios in square brackets. Standard errors are in parenthesis. *** p<0.01, ** p<0.05, * p<0.1.

In Model 1 in Table 5.2 above, the baseline regression is presented excluding oil and gas reserves. Oil production significantly increases the risk of conflict onset. Oil-producing countries are about 4 times more likely to experience conflict than non-oil-producing countries. This is true for countries such as Nigeria, South Sudan, and Congo. The result is in line with earlier studies that find that oil producers and exporters are more likely to experience conflict onset, especially if the resource is easily accessible. The results are different when gas production is considered. Gas production is seen to reduce the incidence of conflict. Very few countries in SSA have gas production.

Only 4 countries out of the 44 countries in the sample produce gas commercially, while 10 countries have gas reserves, but are not producing commercially. This might be the reason for the negative correlation. Diamond production also reduces the incidence of conflict, but with a small magnitude. In literature (Lujala, 2010), a differentiation is made between secondary and primary diamond production, but for the purposes of this study, diamond production has been aggregated. In the sample, 16 out of the 44 countries produce diamonds. Botswana, South Africa, and Angola are the top diamond producers in Sub-Saharan Africa; these countries experience relatively low levels of conflict. Though in the late 1990s, diamonds were used to fuel rebel movements in Angola and Sierra Leone (Le Billion, 2008). The likelihood of gas and diamond production triggering a conflict is very low, as the odd ratios (see Table 5.2) are less than 1. Population, percentage of country covered in mountains, polity, and linguistic fractionalisation all increase the likelihood of countries experiencing a conflict onset. Models 2-5 are versions of the baseline regression in Model 1.

In Model 2, the Gini coefficient proxy for inequality is added to the model and the changes are not too different from Model 1. The variable itself is statistically significant and negatively affects the likelihood of conflict onset. It therefore suggests that in Sub-Saharan African countries, income inequality does not necessarily cause conflict incidents. Mitchell

(1968) and Hegre, Gissinger and Gleditsch (2003) also find a negative relationship with conflicts onset and inequality. It is important to note that this chapter has considered inequality in the total population. It is plausible that inequality between certain groups of people (horizontal inequality) increases the likelihood of conflict onset. Model 3 excludes gas production and the inequality variable; the results show that the likelihood of a conflict onset is reduced with oil present in the country. All other variables exhibit similar results. Models 4 and 5 include gas reserves and oil reserves respectively; the presence of oil and gas reserves increase the likelihood of conflict onset by at least 6 times for countries with gas reserves and 2 times more for countries with oil reserves.

The income level proxied by growth rate of GDP per capita has the expected negative sign and significant in Models 3, 4 and 5. The polity variable captures the level of democracy in each country, with a strong democracy represented as 10 and strongly autocratic as 0. The relationship is significant and positive, which shows that civil war onsets are no less frequent in democracies. Fearon and Laitin (2003) also find that level of democracy positively impacts on conflict onset.

Table 5.3A and 5.3B presents the results of conflict onset and total reserves as the main explanatory variables, with land, forest area, and rents from natural resources as other explanatory variables. Total reserves as a percentage of GDP has a negative but significant effect on conflict onset, which suggests that the level of reserves in the countries does not increase the risk of conflict. However, coal rents, land area, agricultural land, and forest rents increases the likelihood of a conflict onset. This advocates that countries receiving rents from coal and forest area are 1.2 times more likely to experience conflict; the higher the percentage of agricultural land available to a country, the more likely the country experiences conflict onset. This is plausible in most African countries, as some conflicts stem from arguments of rights of land and grazing area for cattle. In the case of Nigeria, conflicts between herdsmen

173

and farmers claimed the lives of at least 168 people (Adekola, 2018). The herdsmen are predominantly Fulanis, a primarily Muslim people, while the farmers are mostly Christians. Therefore, when violence erupts between the two groups – with symbolic results like churches being burnt down – it is anticipated that the dominant narrative in Nigeria and abroad is that this is a conflict motivated by religion and ethnicity.

Mineral rents surprisingly reduce the risk of conflict onset; mineral rents in the data include minerals such as tin, gold, lead, iron, zinc, copper, nickel, silver, bauxite, and phosphate. The rationale to this result could be that there is no incentive for rebels to raise money with these types of commodities and they are therefore not classified as important compared to oil and diamonds. In addition, very few countries produce these minerals commercially in the sample. Examining the Gini coefficient, there is a negative and significant relationship with conflict onset in Table 5.2; the negative relationship is maintained in Table 5.3A but with no statistical significance. This result indicates that inequality reduces the likelihood of conflict onset in the countries examined.  Collier and Hoeffler (1996) find that greater inequality significantly reduces the risk and duration of war, which is similar to the result obtained in this chapter. The authors find that inequality is inversely related to conflict and this could be argued from a political view; that is, a high degree of inequality reveals the existence of dominant elite, whose attachment to the status quo means they will allow temporarily high taxes from the government to raise funds to protect the status quo. On the other hand, prospective rebels will calculate that the government has a greater capacity to finance a military campaign against them, thereby reducing the chances of a successful rebellion.

**Table 5.3A – Onset of armed conflict, 1980 – 2016**

| VARIABLES | Model 6 | Model 7 | Model 8 | Model 9 | Model 10 |
|---|---|---|---|---|---|
| Log(Total reserves) | -0.377*** | -0.386*** | -0.391*** | | |
| | [0.685] | [0.680] | [0.676] | | |
| | (0.102) | (0.102) | (0.0938) | | |
| Land area, log | 0.589*** | 0.675*** | 0.689*** | | |
| | [1.929] | [1.965] | [1.992] | | |
| | (0.153) | (0.145) | (0.144) | | |
| Forest rents | 0.081*** | 0.082*** | 0.085*** | -1.097*** | -0.747** |
| | [1.104] | [1.085] | [1.088] | [0.334] | [0.474] |
| | (0.021) | (0.019) | (0.018) | (0.286) | (0.312) |
| Mineral rents | -0.227** | -0.211** | -0.214** | -1.916*** | -1.371*** |
| | [ 0.747] | [0.810] | [0.807] | [0.147] | [0.254] |
| | (0.104) | (0.096) | (0.099) | (0.458) | (0.498) |
| Forest area | -0.0096 | -0.0111 | -0.0111 | | |
| | [0.987] | [0.989] | [0.989] | | |
| | (0.007) | (0.007) | (0.007) | | |
| Coal rents | 0.511 | | | | |
| | [1.793] | | | | |
| | (0.425) | | | | |
| Agricultural land | 0.038*** | 0.045*** | 0.042*** | | 0.023** |
| | [1.040] | [1.046] | [1.043] | | [1.024] |
| | (0.011) | (0.010) | (0.010) | | (0.011) |
| Gini coefficient | -0.003 | -0.005 | | | |
| | [1.001] | [0.995] | | | |
| | (0.024) | (0.021) | | | |
| Polity(democracy score) | -0.0754 | -0.0461 | | 0.0307 | 0.0294 |
| | [0.909] | [0.955[ | | [1.031] | [1.030] |
| | (0.069) | (0.062) | | (0.067) | (0.067) |
| % country covered in mountains | 0.0485 | | | 0.0582 | 0.116 |
| | [0.987] | | | [1.060] | [1.123] |
| | (0.078) | | | (0.088) | (0.091) |
| Ethnic fract. | -5.319** | -5.078** | -4.462** | | |
| | [0.002] | [0.006] | [0.012] | | |
| | (2.079) | (2.081) | (1.984) | | |
| Linguistic fract. | 3.464** | 3.397** | 2.992** | | |
| | [28.64] | [29.88] | [19.93] | | |
| | (1.353) | (1.367) | (1.301) | | |

*Notes: Odds ratios in square parenthesis, Standard errors are in parenthesis. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.*

**Table 5.3B – Onset of armed conflict, 1980 – 2016**

| VARIABLES | Model 6 | Model 7 | Model 8 | Model 9 | Model 10 |
|---|---|---|---|---|---|
| GDP per capita | -0.069*** | -0.073*** | -0.0764*** | -0.0168 | -0.0295 |
|  | [0.929]* | [0.930] | [0.926] | [0.983] | [0.971] |
|  | (0.026) | (0.025) | (0.025) | (0.025) | (0.027) |
| Arable land |  |  |  | -0.200*** | -0.185*** |
|  |  |  |  | [0.819] | [0.831] |
|  |  |  |  | (0.039) | (0.037) |
| Population, log |  |  |  | 1.536*** | 1.309*** |
|  |  |  |  | [4.647] | [3.704] |
|  |  |  |  | (0.263) | (0.271) |
| Resource rents |  |  |  | 1.014*** | 0.686** |
|  |  |  |  | [2.757] | [1.985] |
|  |  |  |  | (0.290) | (0.312) |
| Oil rents |  |  |  | -1.022*** | -0.687** |
|  |  |  |  | [0.360] | [0.503] |
|  |  |  |  | (0.290) | (0.313) |
| Constant | 2.022 | 0.407 | -0.633 | -23.12*** | -20.55*** |
|  | (3.054) | (2.738) | (2.668) | (4.266) | (4.244) |
| Observations | 375 | 384 | 391 | 406 | 406 |
| Log likelihood | -155.962 | -158.400 | -162.690 | -141.433 | -139.329 |

*Notes: Odds ratios in square parenthesis, Standard errors are in parenthesis. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.*

## 5.6.2 Duration Analysis

Table 5.4 presents the results for the duration analysis. Model 11 includes a dummy for oil production, oil reserves, diamond production and hydrocarbon production. Oil production does not seem to prolong the length of conflict. However, diamond production, oil reserves, and hydrocarbon production increases the duration of conflict. In Model 12, mountainous terrain and forest area are included in the estimation, these variables are expected to benefit rebels; the mountainous terrain variable is statistically significant, which is consistent with the theory that a country with a high percentage of mountainous terrain will experience an increase in duration of conflict, as this terrain provides hiding places during conflict. Also, it is theorised that the larger the forest area, the more rebels can find hiding places to strategise and plan rebellious activities. The polity variable reduces duration of conflict; it is therefore impossible to say categorically that democracy prolongs conflict. Oneal and Russett (1999) find that democratic

countries experience a reduction in violent conflicts. This view is supported by Lucina (2005), who suggests an explanation to this may be that parties engaged in conflict are less likely to use overly brutal methods to bring rebellion to an end. However, the variable territory increases the duration of conflict.[50] Therefore, this suggests that territorial conflicts last longer than any other conflicts in the region. In Model 13, oil reserves, territory, and Gini coefficient are excluded to check the robustness of the main explanatory variables; the results show no significant changes to the coefficients and time ratios.

In Model 14, gemstones variable, gas reserves, and gas production are included in the analysis and the results are quite similar to Model 11 estimations. However, there is no statistical significance relationship between gas reserves and gemstones production to the duration of conflict. Similar to Table 5.3A, gas production reduces the duration of conflict for countries producing gas, or a 73% lower hazard rate. Model 15 is similar to 14, but excludes gas reserves because it is insignificant. All the other variables exhibit similar results except for gas production. In the model, gas production is no longer statistically significant to reducing the duration of conflict; there is a lower hazard rate, but it cannot be scientifically justified.

These results imply that the presence of oil lengthens the conflict. It therefore seems that duration is lengthened not only by the financing available to rebels, but also by the promise of future revenue of oil reserves in the region. For the rebels, the exertion and investment in fighting could be justified by the chance of winning control over resources located in the area. The rebels may want outright independence to overthrow the present government or local authority, or else to strengthen their position in negotiations over how revenues from the resources should be shared (Lujala, 2010). The issue of revenue sharing from oil exploitation has been central to most African countries, for example, in Sudan, Nigeria, and Chad

---

[50] The territory variable is a dummy variable that carries 1 if the conflict is fought over territories and 0 otherwise

(Humphreys, 2005; Lujala, 2010). Therefore, it is possible to imply that resources – either located in a conflict area or outside a conflict area - lengthen the duration of the conflict. These effects may work through the feasibility mechanism and the domestic conflict premium mechanism (Humphreys, 2005).

**Table 5.4 Duration of armed conflict, 1970 - 2016**

| VARIABLES | Model 11 | Model 12 | Model 13 | Model 14 | Model 15 |
|---|---|---|---|---|---|
| Oil production | -3.084*** | -2.234*** | -2.049*** | -3.113*** | -3.175*** |
| | [0.046] | [0.107] | [0.129] | [0.045] | [0.042] |
| | (0.836) | (0.471) | (0.428) | (0.790) | (0.805) |
| Oil reserves | 1.715*** | -0.0942 | | 1.906*** | 1.965*** |
| | [5.557] | [0.0942] | | [6.728] | [7.138] |
| | (0.653) | (0.541) | | (0.673) | (0.695) |
| Diamond production | 1.072** | 1.084** | 1.118*** | 1.096 | 1.102 |
| | [2.921] | [2.956] | [3.059] | [2.991] | [3.011] |
| | (0.486) | (0.453) | (0.425) | (0.671) | (0.672) |
| Hydrocarbon production | 0.991* | 1.088*** | 1.010*** | 1.188** | 1.215** |
| | [2.693] | [2.968] | [2.747] | [3.279] | [3.371] |
| | (0.549) | (0.352) | (0.334) | (0.565) | (0.561) |
| Mountainous terrain, log | | 0.180*** | 0.126** | | |
| | | [1.198] | [1.134] | | |
| | | (0.0698) | (0.064) | | |
| Forest area, log | | 0.146 | 0.131 | | |
| | | [1.157] | [1.140] | | |
| | | (0.093) | (0.090) | | |
| Polity | | -0.208*** | -0.176*** | | |
| | | [0.812] | [0.838] | | |
| | | (0.057) | (0.062) | | |
| Territory | | 1.063** | | | |
| | | [2.895] | | | |
| | | (0.416) | | | |
| Gini coefficient | | 0.00592 | | | |
| | | [1.006] | | | |
| | | (0.029) | | | |
| Gemstones production | | | | -0.104 | -0.320 |
| | | | | [0.901] | [0.726] |
| | | | | (0.691) | (0.688) |
| Gas reserves | | | | 0.514 | |
| | | | | [1.673] | |
| | | | | (0.357) | |
| Gas production | | | | -1.344* | -1.072 |
| | | | | [0.261] | [0.342] |
| | | | | (0.807) | (0.745) |
| Constant | 1.057*** | 2.176* | 2.608*** | 0.976*** | 1.187*** |
| | (0.346) | (1.232) | (0.436) | (0.362) | (0.331) |
| Log likelihood | -116.236 | -94.151 | -99.343 | -115.460 | -115.741 |
| Observations | 218 | 199 | 202 | 218 | 218 |

*Notes: The table shows the time ratios in square parenthesis for duration analysis. *** p<0.01, ** p<0.05, * p<0.1.*

## 5.7 Conclusion

This chapter analyses the effect of natural resources on conflict onset and duration focusing on countries in Sub-Saharan Africa. The natural resources analysis was divided into rents from resources and the availability and production of solid minerals. The results from the duration analysis show that natural resources prolong the duration of conflict. However, it is found that not all resources prolong duration of conflict. Oil production does not seem to seem to affect duration, whereas oil reserves and gas production lengthen duration. Gemstones production and gas reserves have no significant relationship with duration of conflict, while diamond production significantly increases the hazard rate of conflict. This could be as a result of exploitation of these resources; if rebels have easy access to the natural resources it becomes easier to use the money from extraction and exploitation to finance rebellious activities. In the duration analysis, the results suggest that there is no evidence of any effect of gemstones production and reserves on the length of conflict. These results are comparable to those in Humphreys (2005) and Lujala (2010).

On the other hand, for the onset analysis, the results show that both production and reserves increase the risk of conflict onset. Revenues from total reserves, mineral rents, and ethnic fractionalisation reduce the risk of conflict onset, whereas, forest rents, land area, agricultural land, population, and linguistic fractionalisation increase the risk of conflict onset. The onset analysis also reveals that a country with diamond production is susceptible to conflict arising. The income inequality analysis - using the Gini coefficient - shows that inequality does not increase the risk of conflict onset. This suggests that conflicts in SSA are not started as a direct result of income inequality, but may be the result of grievances about low income between groups and escalated with ethnic or religious fractionalisation. The conventional theory holds that inequality triggers conflict and violence, most especially inequality among different groups (Bahgat et al., 2017). This does not seem to hold for countries in the sample.

However, it is plausible that inequality may trigger conflicts at the sub-national level in these countries.

The results from the estimation suggest that natural resources are related to conflict duration and can prolong the duration of conflict. There are several possible explanations for this: first, rebels may simply want to prolong conflicts - even if they are not able to exploit the resources during conflict - if the benefits of increasing the duration of conflict outweigh the exploitation; second, rebels may be able to sell the extraction of the natural resources to finance ongoing conflict (Ross, 2005). Oil reserves may also be a way for rebels to gain financially through the greedy or grievance mechanisms. As Nigeria shows, oil production is potentially lootable and a good revenue source for rebels.

In Nigeria, crude oil is looted from pipelines in the Niger-delta region and sold often in the black market (Human Rights Watch, 2003; 2007). The Niger Delta's people have also had to cope with the environmental impacts of a poorly regulated oil industry. The link between hydrocarbons and duration is relatively new. Earlier studies conclude that oil is not linked to conflict duration (Ross, 2004; Sambanis, 2004) or that production makes conflict shorter (Humphreys, 2005). However, none of these studies look into the link between hydrocarbons and conflict duration. This study thus provides evidence that non-lootable resources (hydrocarbons) may have a great impact on rebel groups and their viability. There are several possible explanations for this: rebels may simply be willing to engage in long conflicts even when they are not able to exploit the resource base during the conflict if the future prize is large enough; rebels may also be able to sell future extraction rights – "booty futures" – to finance the conflict (Ross, 2005).

# CHAPTER 6

# Summary of Findings, Policy Implication and Future Research

## 6.1 Introduction

This chapter concludes the thesis and presents the author's final reflections. It summarises the findings of the empirical chapters and highlights the thesis' original contribution to knowledge, the limitations of the research, and areas for further research. There are three independent empirical chapters which examine the relationship between conflict, economic growth, state capacity and natural resources. Although, the ongoing debate on the impact of conflict on economic conditions and vice versa remains. This thesis contributes to the existing literature by extending the methodological dimensions and analysing country-specific, state level data to study the effect of economic growth on conflict. Most studies on economic growth and conflict are cross-country based, which more often than not are likely to be biased due to the differing levels of income and the economic and social backgrounds of these countries. In addition, the research analysis examines the relationship between state capacity, natural resources, and conflict across countries in Sub-Saharan Africa.

## 6.2 Summary of Findings

The overall objective of the first empirical chapter is to examine the relationship between economic growth and conflict in Nigeria. The chapter provides some answers to the research question: Does economic growth have an effect on conflict? The study employs the negative binomial model in estimating the 36 states in Nigeria including the *Federal Capital Territory (FCT)* - for the period 1997 - 2013. The findings suggest that economic growth has a statistically significant negative effect on conflicts, but this effect is delayed by at least a year, showing there is a time effect in growth reducing the incidence of conflicts. Hence, in line with

the findings of Bohlken and Sergenti (2010), Collier and Hoeffler (1998, 2004), and Miguel, Satyanath and Sergenti (2004), this study finds that economic growth reduces the number of conflicts at the state level in Nigeria. The other explanatory variable - number of conflicts in adjacent states – is also positive and significant. There is, therefore support for both of the arguments that previous violence begets current violence and that violence may diffuse across state borders through contagion effects. These results also indicate that conflicts are more likely when groups are more evenly matched.

Similarly, using annual changes in rainfall as an instrument for economic growth, the findings of this research are not driven by reserve causality or omitted variables such as weakened civil associations or institutional changes. The findings support the conventional wisdom that higher levels of socio-economic development - in the form high GDP per capita reduce the occurrence of conflict.

The research on the effect of conflict on state capacity shows that conflicts deteriorate the capacity of the state. African countries are generally considered as having weak institutions or as fragile states; conflicts experienced will further deplete the state capacity, which could lead to a failed state (FundforPeace, 2018; OECD fragility report). The thesis finds that internal conflicts are a source of destruction of state capacity, even after addressing potential endogeneity. However, external conflicts have a positive effect on state capacity on one of the measures of state capacity across countries, but it could be over a much longer time horizon than considered in this chapter. The System GMM estimations are also consistent with the hypothesis that internal conflict does matter greatly for state capacity. On average, countries involved in an internal conflict have less capacity to collect taxes and govern efficiently compared to a situation where there is no conflict. Probable factors behind this relationship include the deterioration of the tax administration system; the obstacle to tax collectors to go about their business; and a reduction in the willingness to pay taxes of a citizenry that does not

feel protected or feels that the local government has been captured by illegal groups. In turn, attacks perpetrated by illegal armed groups undermine the governments' ability in the provision of public goods. It is likely that in regions where such armed groups are present, governments are either unable or unwilling to spend in public goods. This empirical fact supports the argument that internal conflicts divide societies and make it more difficult for countries to reach a consensus on whether to invest in state capacity. In turn, weaker state capacity likely exacerbates conflict, generating a negative spiral.

The third empirical chapter sets out to answer these questions: "*Do natural resources cause the onset of conflict?*" and "*Does the type of natural resources matter in starting or prolonging a conflict?*" Given the abundance of natural resources in countries in Sub-Saharan Africa - with the exception of a few countries - this chapter examines if natural resources increase the risk of conflict onset or lengthen the duration. In assessing the findings of this chapter, it is important to note that natural resources in the literature are classified according to the geographical and social features inherent in their status as commodities. These classifications are identified as lootability, legality and obstructability. Lootability denotes how easily an individual can extract a resource; while obstructability signifies how easily a resource's transportation can be hindered. Legality refers to a resource´s legal status as an international commodity or in other words, how easily a commodity can be sold on international markets. Conjointly they provide a means of identifying a resource according to its physical and social properties, allowing for a more unambiguous view of the relationship between natural resources and conflict onset and duration.

Earlier studies conclude that oil is not linked to conflict duration (Ross, 2004; Sambanis, 2004) or that production makes conflict shorter (Humphreys, 2005). However, none of these studies look into the location or presence of hydrocarbons in relation to conflict. The findings of this study show that the mere presence of hydrocarbon in SSA lengthens conflict. The

presence of hydrocarbons could affect the rebel groups directly, because the revenue flows that potentially could affect the state are not always present. It also suggests that rebels are forward looking and engage in conflicts with promise of future revenues which may be as a result of resources being lootable. Ross (2004) argues that oil production is relevant for conflict onset, but not for duration. He further argues that evidence suggests that lootable resources affect only duration but not the risk of conflict onset. Similarly, this study finds that in Sub-Saharan Africa, oil production does not prolong conflict. However, diamond production, oil reserves, and hydrocarbon production all lengthen conflict duration. There are several possible explanations for this: first, rebels may simply be willing to engage in long conflicts - even when they are not able to exploit the resource base during the conflict - if the future prize is huge, rebels may also be able to sell future extraction rights - 'booty futures' - to finance the conflict (Ross, 2005).

The results indicate that the mere presence of natural resources increases the risk of conflict onset. A detailed look into the types of natural resources shows that oil-producing countries are at a higher risk of conflict onset; this is true for countries such as Nigeria, South Sudan, and Congo. The results suggest that rebel access to resources crucially shapes armed conflict. A country with diamond reserves is also at a higher risk of conflict onset. However, this study finds that diamond production reduces the risk of conflict onset. In the literature, a differentiation is made between secondary and diamond production (Lujala, 2010) but for the purposes of this study, diamond production has been aggregated. There are a total of 16 countries out of the 44 in the sample that produce diamonds. Botswana, South Africa and Angola are the top diamond producers in SSA. These countries experience relatively low levels of conflict, which could therefore explain why there is a negative effect for diamond production.

## 6.3 Main Contributions and Implications of the Study

Several implications and contributions arise from the three empirical chapters in this study. The thesis largely contributes to conflict and economic growth literature. While it is the contention by many researchers (Bates, 2001; Harold, 1997 and Murdoch and Todd, 2002) that the relationship between economic growth and conflict is positive, others maintain that it is the reverse (Collier and Hoeffler, 2002; Herge and Sambanis, 2006; Zuk, 1985). In the case of Nigeria, there are only a handful of empirical analyses on economic growth and conflict. Therefore, this study contributes to the limited empirical literature in the country. The analysis shows a strong link negative relationship between economic growth and conflict at the state level; that is, economic growth reduces the number of conflicts at the state level.

This is, however, contrary to what can be observed at the national level. Nigeria is experiencing increased economic growth as well as a rise in conflicts, particularly in the northern region. Theoretical and empirical reasons have been advanced as to why this may happen. The argument is that if economic growth leads to an increase in the value of assets that a country possesses, this may induce higher predisposition by individuals and groups to have control over the productive resources. This argument - which seems highly plausible in the context of many developing countries - is advanced by Bates (1973); he contends that growth and modernisation may be an incubator of violence - in that a positive correlation between increased economic growth and violence is related to the process of economic development - which is capable of generating a radical re-organisation of political structures that can subsequently engineer conflict. Consequently, development policies must seek to integrate conflict-lessening measures that specifically address groups, communities and organisations. The growth experienced should also trickle down to the rural areas to avoid greed or grievances that can spring up rebels. Furthermore, it is certain that economic growth reduces conflict in the case of Nigeria; the government should, therefore, have the gains of growth distributed

among the varied sectors of the society. Policies could be targeted more towards income distribution than higher growth, so as to diffuse rebel uprising and increase employment. Additionally, the growth process is crucial; in an environment where growth is not inclusive and embracive - such as appears to be the case in Nigeria where the "Dutch Disease" has been preeminent (Iyoboyi, 2014) - there needs to be a deliberate effort to target youth employment through incentives such as apprenticeships and job creations.

For the second empirical chapter, the thesis contributes to literature by showing that diverse forms of conflict impact on state capacity differently. Two types of conflict were considered: internal and external conflict. In SSA, internal conflicts tend to disrupt both legal and fiscal capacity, while external conflicts have a positive effect on fiscal capacity, but a negative effect on legal capacity of the state. Conflict prevention could be enhanced by government focusing on investing in tax institutions and systems to generate more revenue for the government. Internal conflicts have shown to reduce state capacity; the government could target development policies that will repress the incident of internal conflicts. This could be achieved by alleviating grievances among different ethnic backgrounds.

Ethnic fractionalisation is one of the mechanisms through which conflict arises and then disrupts the capacity of the state to function effectively. To counter this, policy options may include: regional integration programs; political systems that promote broad based political representation; and education. During periods of conflicts, additional support should be given to the legal system to minimise the impact on property rights and private markets (see Tables 4.5, 4.8, and 4.9). Foreign aid received by African nations could be used in further developing further the military capacity of the states. The results obtained show that foreign aid positively affects legal capacity, but has a negative correlation with fiscal capacity. The government can ensure that aid received is channelled into building the military capacity of the state or in improving the literacy and school enrolment rate of its citizens. Lastly, there is a need for

government transparency to enable citizens build trust towards the government's actions and inactions.

The third empirical chapter analysis suggests that access to natural resources increases the duration of conflict in SSA. The type of natural resource also influences the risk of a conflict onset. Oil production is seen not to affect the duration of conflict, but oil reserves increase the onset of conflict. In SSA, solid minerals tend to increase the risk of conflict, while duration of conflict is dependent on the type of solid minerals and if rebels can gain financially from looting the natural resource. Arguably, natural resources are linked to conflict onset and duration through their effects on rebels' motivations and opportunities. As earlier mentioned, if citizens are gainfully employed with basic economic and social services provided for by the government, it is plausible that the motivation to loot these resources or the greedy mechanism will be eliminated. Therefore, it is important for governments to ensure an improvement in the living standard of its citizens. Public institutions also need to be developed to repress any intending obstructions or looting of these resources. Government transparency and accountability is paramount in reducing or preventing an uprising among citizens. Government could also increase investment in the defence sector to avoid exploitation since sometimes conflicts arise as a result of future gains or "booty futures".

## 6.4 Limitations of the Research

Each research study - regardless of how well conducted or constructed - suffers some limitations. Hence this study acknowledges some limitations, which by no means undermine the analysis or the findings. The foremost limitation with the research is the issue of data. The first chapter is constrained by lack of robust data at the state level in Nigeria. It is impossible to find state level data on unemployment, income inequality, or percentages of Muslims and

Christians in each state, which is intended to measure any religious intolerance and its impact on conflict. However, the study is able to use the available data with different estimation methods to check for robustness. Second, in measuring the effect of conflict on state capacity, cross-country study of African countries is carried out using panel data. These countries are at different fragility indexes, in other words, there might be better results if countries within a specific sub-region or in a country-specific study were analysed, but due to low quality data, this was impossible to achieve. Lastly, natural resources location and distance to the nearest urban city could be important in analysing its impact on conflict onset or duration. This research is not able to measure the accessibility and transportation cost of both onshore and offshore production of these resources.

# 6.5 Directions for Further Research

This thesis analyses the relationship between economic growth and conflict in general terms, specifically looking into the relationship between conflict, state capacity, and natural resources. First, a more robust weak state index could be constructed following one put forward by Rice and Patrick (2008). The new index could be more robust in adding more indicators to each of the 4 sector indicators of state weakness. Countries could then be grouped and analysed based on the new index. Countries identified as critically weak can be grouped together and analysed. This could potentially add more knowledge to the existing literature. Furthermore, inclusion of additional measures of both natural resources and state capacity could improve the research analysis. It seems likely that natural resources differ in their effect on armed conflicts.

Likewise, further disaggregation of the concept of armed conflict would be beneficial. This could be done by conceptualising armed conflict as inherently multilevel. Thinking multilevel is conceptually beneficial since it's becoming increasingly accepted that conflicts are inherently local in their nature. Studying conflict at multiple levels - for instance, by

examining factors at the local, national, and international level - could provide new and important information on how conflicts are initiated, and how they can be ended. The intensity of these conflicts could also prove to be favourable to the research.

# References

Ababu, A. (2015). State-building and Non-State Conflicts in Africa. *Strategic Review for Southern Africa*, 37(1), pp. 99-121.

Abu-Nimer, M. (2000). Conflict resolution, culture and religion: Toward a training model of inter-religious peace building. *Journal of Peace Research*, 38(6), pp. 685–704.

Acemoglu, D. Johnson, S. and Robinson, J., (2001). The colonial origins of comparative development: an empirical investigation. *American Economic Review,* 91(5), pp. 1369–1401.

Acemoglu, D., García-Jimeno, C., and Robinson, J. (2015). State Capacity and Economic Development: A Network Approach. *American Economic Review*, 105(8), pp. 2364-2409.

Adebayo, I. (2010). Ethno-religious crises and the challenges of sustainable development in Nigeria. *Journal of Sustainable Development in Africa*, 12(4), pp. 213–225.

Adekola, O. (2018). Nigeria's conflict is a result of environmental devastation across West Africa. *The Conversation* [online]. Available at: https://theconversation.com/nigerias-conflict-is-a-result-of-environmental-devastation-across-west-africa-91694 [Accessed 1 May 2018]

Adeola, F. (1996). Military Expenditures, Health, and Education: Bedfellows or Antagonists in Third World Development? *Armed Forces and Society,* 22, pp. 441–467.

Ake, C. (1974). Modernization and political instability: A theoretical exploration. *World Politics*, 26(3), pp. 576–591.

Alao, A. (2007). *Natural resources and conflict in Africa: The Tragedy of Endowment*. New York: University of Rochester Press.

Aldrich, J. (1994). *Why Parties?* Chicago: University of Chicago Press.

Aleyomi, M. (2012). Ethno-Religious Crisis as a Threat to the Stability of Nigeria's Federalism. *Journal of Sustainable Development in Africa*, 14(3), 127-140.

Alesina, A., Baqir, R., and Easterly, W. (1999). Public goods and ethnic divisions. *Quarterly Journal of Economics*, 114, pp. 1243-84.

Andreas, A. and De Juan, A. (2007). Grasping the Impact of Religious Traditions on Political Conflicts: Empirical Findings and Theoretical Perspectives. *Journal of International Peace and Organization,* 82(2–3), pp. 19–47.

Angell, N. (1933). *The great illusion.* New York: Putnam.

Angrist, J. (2004). Treatment effect heterogeneity in theory and practice. *Economic Journal* 114(March), pp. C52–C83.

Annan, N. (2014). Violent Conflicts and Civil Strife in West Africa: Causes, Challenges and Prospects. *International Journal of Security and Development*, 3(1), pp.1-16

Arellano, M. and Bond, S. (1991). Some Tests of Specification for Panel Data: Monte Carlo Evidence and an Application to Employment Equations. *Review of Economic Studies,* 58, pp. 277-297.

Arellano, M. and Bover, O. (1995). Another Look at the Instrumental Variables Estimation of Error Components Models. *Journal of Econometrics,* 68, pp. 29-51.

Arriola, R. (2009). Patronage and political stability in Africa. *Comparative Political Studies,* 42(10), pp. 1339–62.

Arrous, B. and Feldman, R. (2014). Understanding contemporary conflicts in Africa: a state of affairs and current knowledge. *Defence & Security Analysis*, 30(1), pp. 55-66.

Aziz, N. and Asadullah, M. (2016). Military Spending, Armed Conflict and Economic Growth in Developing Countries in the Post-Cold War Era. Discussion Papers 2016-03, University of Nottingham, *CREDIT*.

Baechler, G. (1998). Why Environmental Transformation Causes Violence: A Synthesis. *Environmental Change and Security Report*, 4, pp. 24-44.

Balogun, K. (1988). Religious intolerance as a source of national disintegration. *Religion and national unity*. Ibadan: Ibadan University Press.

Bahgat, K., Dupuy, K., Gates, S., Nygård, H., Aas Rustad, S., Strand, H., Urdal, H., Gudrun Østby, G., Barrett, G., and Hillesund, S. (2017). *Inequality and Armed Conflict: Evidence and Data*. City published: Publisher, pp. 1-209.

Bakwesegha, C. (1997). Conflicts Resolution in Africa: A New Role for the Organisation of African Unity?. In: G.M Sorbo & P. Vale, ed., *Out of Conflict: From war to Peace in Africa*. Uppsala: Nordiska Afrikainstitutet., pp. 77-79.

Bannon, I and Collier, P. (2003). *Natural resource and violent conflicts*. Washington DC: World Bank.

Barbieri, K. and Reuveny, R. (2005). Economic globalisation and civil war. *Journal of Politics,* 67(40), pp. 1229-1247.

Barro, R. J., and Xavier, S. (1995). *Economic Growth*. New York: McGraw-Hill.

Basedau, M. and De Juan, A. (2008). The 'Ambivalence of the Sacred' in Africa: The Impact of Religion on Peace and Conflict in Sub-Saharan Africa. *GIGA Working Papers 70*. Hamburg: German Institute of Global and Area Studies.

Basedau, M., Strüver, G., Vüllers, J., and Wegenast, T. (2011). Do Religious Factors Impact Armed Conflict? Empirical Evidence from Sub-Saharan Africa. *Terrorism and Political Violence,* 23(5), pp. 752-779.

Basedau, M., Vüllers, J., and Körner, P. (2013). What Drives Inter-Religious Violence? Lessons from Nigeria, Côte d'Ivoire, and Tanzania. *Studies in Conflict & Terrorism*, 36(10), pp. 857-879.

Benson, M. and Kugler, J. (1998). Power Parity and the Severity of Internal Violence. *Journal of Conflict Resolution,* 42(2), pp. 196-209.

Berdal, M. and Malone, D. (2000). *Greed and grievance. Economic agendas in civil wars.* Boulder: Lynne Rienner.

Berman, B. (1998). 'Ethnicity, patronage, and the African state: the politics of uncivil nationalism' *African Affairs,* 97(388), pp. 305–41.

Bernauer, T., Koubi, V., Kalbhenn, A., and Spilker, G. (2012). Climate variability, economic growth, and civil conflict. *Journal of Peace Research,* 49(1), pp. 113–127.

Besley, T. and Persson, T. (2008). Wars and State Capacity. *Journal of the European Economic Association,* 6(2-3), pp. 522-530.

_____. (2009). The Origins of State Capacity: Property Rights, Taxation, and Politics. *American Economic Review,* 99(4), pp. 1218-1244.

_____. (2011). The logic of political violence. *Quarterly Journal of Economics,* 126(3), pp. 1411–1445.
_____. (2010). State Capacity, Conflict and Development. *Econometrica*, 78(1) pp. 1-34.

_____. (2011). *Pillars of Prosperity: The Political Economics of Development Clusters.* City: Publisher. mimeo.

Birdsall, N. and Griffin, C. (1993). Population Growth, Externalities and Poverty, *Policy Research Working Paper, WPS 1158*. Washington DC: World Bank.

Blattman, C. and Miguel, E. (2009). Civil War. *Journal of Economic Literature,* 48(1)*,* pp. 3-57.

Blundell, R. and Bond, S. (1998). Initial Conditions and Moment Restrictions in Dynamic Panel Data Models. *Journal of Econometrics,* 87, pp. 11-143.

Bodea, C. (2012). Natural Resources, Weak States and Civil War. Can Rents Stabilize Coup Prone Regimes?. *Policy Research Working Paper, No. 6071*. Washington DC: World Bank.

Bogoro, S. (2008). Management of Religious Conflicts from a Practitioners Viewpoint. In: *1st Annual National Conference of Society for Peace Studies and Practice (SPSP).* Abuja: Institute for Peace and Conflict Resolution (IPCR).

Bohlken, A. and Sergenti, E. (2010). Economic growth and ethnic violence: An empirical investigation of Hindu-Muslim riots in India. *Journal of Peace Research*, 47(5) pp. 589-600.

Booth, D. and Goolooba-Mutebi, F. (2012). Developmental Patrimonialism? The case of Rwanda. *African Affairs*, 111(444), pp. 379-403.

Boulding, K. E. (1989). *Three Faces of Power*. Newbury Park: Sage Publications.

Bozzoli, C., Brück, T., Drautzburg, T., and Sottsas, S. (2008). Economic Costs of Mass Violent Conflict: Final Report for the Small Arms Survey. *Politikberatung kompakt 42*. Berlin: DIW Berlin.

Braithwaite, A. (2010). Resisting infection: How state capacity conditions conflict contagion. *Journal of Peace Research,* 47(3), pp. 311–319.

Brakman, S. and Garretsen, H., and Schramm, M. (2004). The Strategic Bombing of Cities in Germany in World War II and its Impact on City Growth. *Journal of Economic Geography*, 4, pp. 1-18.

Bratton, M. and Van de Walle, N. (1997). *Democratic Experiments in Africa, Regime Transitions in Comparative Perspective*. Cambridge UK: Cambridge University Press.

Brock, W. and Durlauf, S. (2002). Market Implications of Peer and Neighbourhood Effects: A Multinomial Choice Model of Neighbourhood Effects. *American Economic Review,* 92(2), pp. 298-303.

Brockett, C**. (**1992). Measuring Political Violence and Land Inequality in Central America. *American Political Science Review,* 86(1), pp. 169–76.

Brosche, J. and Elfversson, E. (2012). Communal conflict, civil war, and the state: Complexities, connections, and the case of Sudan. *African Journal on Conflict Resolution,* 12(1).

Bruckner, M. and Ciccone, A. (2010). International Commodity Prices, Growth and outbreak of Civil War in Sub-Saharan Africa. *The Economic Journal*, 120(544), pp. 519-534.

Bueno de Mesquita, B., Smith, A., Siverson, R., and Morrow, J. (2003). *The Logic of Political Survival*. Cambridge MA: MIT Press.

Buhaug, H. (2006). Relative capability and rebel objective in civil war. *Journal of Peace Research,* 43(6), pp. 691–708.

Buhaug, H. (2010). Climate not to blame for African civil wars. *Proceedings of the National Academy of Sciences of the United States (PNAS),* 107(38), pp. 16477–16482.

Buhaug, H. and Rød, J. (2006). Local determinants of African civil wars, 1970-2001. *Political Geography*, 25(3), pp. 315-335.

Burgoon, B. (2006). On Welfare and Terror: Social Welfare Policies and Political-Economic Roots of Terrorism. *Journal of Conflict Resolution*, 50(2), pp. 176-203.

Burke, M., Dykema J., Lobell, D. Miguel, E., and Satyanath, S. (2009). Warming increases the risk of civil war in Africa. *Proceedings of the National Academy of Sciences,* 106(49), pp. 20670–20674.

Byman, D. and Van Evera, S. (1998). Why They Fight: Hypotheses on the Causes of Contemporary Deadly Conflict. *Security Studies*, 7(3), pp. 1-50.

Campbell, J. (1993). The state and fiscal sociology. *Annual Review of Sociology,* 19, pp. 163–185.

Cameron, C. and Parikh S. (2000). Riot games: A theory of mass political violence. In: *Wallace Institute Conference on Political Economy*. Rochester NY: University of Rochester.

Cárdenas, M. and Tuzemen, D. (2011). Underinvestment in state capacity: the role of inequality and political instability. *Research Working Paper*, Federal Reserve Bank of Kansas City.

Cárdenas, M., Eslava, M., and Ramírez, S. (2011). Under-investment in state capacity: The role of inequality and political instability. *Research Working Paper*, Federal Reserve Bank of Kansas City.

_____. (2013). Do Modern-time Wars Make States? Panel Data Evidence. Mimeo, Universidad de Los Andes.

Cashman, G. (2014). *What causes war? An introduction to theories of international conflict.* Lanham: Rowman & Littlefield.

Carothers, T. (2002). The End of the Transition Paradigm. *Journal of Democracy 13*(1) pp. 5-21.

Carrell, M., Jennings, D., and Heavrin, J. (1997). *Fundamentals of Organizational Behaviour*. New Jersey: Prentice Hall, Inc.

Centeno, M. (1997). Blood and Debt: War and Taxation in Latin America. *American Journal of Sociology*, 102(6), pp. 1565-1605.

_____, (2002). *Blood and Debt: War and the Nation-State Latin America*. Pennsylvania: Penn State University Press.

Chaudhry, K. (1997). *The Price of Wealth: Economies and Institutions in the Middle East*. Ithaca NY: Cornell University Press.

Chauvet, L. (2003). Socio-political instability and the allocation of international aid by donors. *European Journal of Political Economy,* 19(1), pp. 33-59.

Cheibub, J. (1998). Political regimes and the extractive capacity of governments: Taxation in democracies and dictatorships. *World Politics,* 50(3), pp. 349–376.

Chung, K. and Megginson, L. (1981). *Organizational behaviour: Developing managerial skills*. New York: Harper & Row Publishers.

Cincotta, R and Engelman, R. (1997). Economics and Rapid Change: The influence of population growth. *Occasional Paper (Population Action International),* 3.

Ciccone, A. (2013). Estimating the effect of transitory economic shocks on civil conflict. *Review of Economics and Institutions,* 4(2), pp. 1-14.

Coast, E. (2002). Maasai Socioeconomic Conditions: A Cross Border Comparison. *Human Ecology,* 30(1), pp. 79–105.

Collier, P. (2007). *The Bottom Billion: Why the Poorest Countries Are Failing and What Can Be Done About It*. Oxford: Oxford University Press.

Collier, P. and Hoeffler, A. (1998). On the Economic causes of Civil Wars. *Oxford Economics Papers*, 50, pp. 563-573.

Collier, P and Hoeffler, A. (2004). Greed and Grievance in Civil War. *Oxford Economic Papers,* 56, pp. 563–595.

Collier, P. and Sambanis N. (2002). Understanding Civil War: A New Agenda. *Journal of Conflict Resolution,* 46(1), pp. 3-12.

Collier, P. (2006). *Economic causes of civil conflict and their implications for policy.* Washington, DC: World Bank.

Cottingham, C. (1974). *Contemporary African Bureaucracy: Political Elites, Bureaucratic Recruitment, and Administrative Performance*. Morristown NJ: General Learning Press.

Cramer, C. (2003). Does Inequality Cause Conflict? *Journal of International Development*, 15, pp. 397-412.

Cruise O‟Brien, D. (1991). The Show of State in Neo-Colonial Twilight: Francophone Africa. In: Manor, J., ed. *Rethinking Third World Politics*. London: Longman.

Cuvelier, J., Olin, N., and Vlassenroot, K. (2013). Resources, Conflict and Governance: a critical review of the evidence. *Justice and Security Research Programme Paper 9.* London UK: London School of Economics and Political Science.

Dauda, D. (2001). Ethnic identity, democratization and the future of the African state: lessons from Nigeria. *African Issue,* 29(1-2), pp. 31-36.

Dauvergne, P. (1998). Environmental Insecurity, Forest Management and State Responses in Southeast Asia. *Department of International Relations Working Paper,* 1998(2).

Deininger, K. and Squire, L. (1996). A new data set for measuring income inequality. *World Bank Economic Review*, 10, pp. 565–591.

De Rouen, K. and Sobek, D. (2004). The dynamics of civil war duration and outcome. *Journal of Peace Research,* 41(3), pp. 303–320.

De Soysa, I. and Neumayer, E. (2007). Resource Wealth and the Risk of Civil Conflict Onset: Results from a New Dataset on Natural Resource Rents, 1970-1999. *Conflict Management and Peace Science,* 24, pp. 201-218.

De Soysa, I. and Fjelde, H. (2010). Is the hidden hand an iron fist? Capitalism and civil peace, 1970–2005. *Journal of Peace Research,* 47(3), pp. 287–298.

De Soysa, I. (2002). Paradise is a Bazaar? Greed, Creed, and Governance in Civil War, 1989–99. *Journal of Peace Research,* 39(4), pp. 395–416.

Department For International Development (DFID) (2005). *Why We Need to Work More Effectively in Fragile States*. London UK: Department for International Development.

Diamond, L. (1987). Class Formation in the Swollen African State. *Journal of Modern African Studies*, 25(4), pp. 567-596.

DiGiuseppe, R., Barry, C., and Frank, R. (2012). Good for the Money: International Finance, State Capacity, and Internal Armed Conflict. *Journal of Peace Research,* 49(3), pp. 391-405.

Di John, J. (2008). Conceptualising the Causes and Consequences of Failed States: A Critical Review of the Literature. *Working Paper No. 25*. London: Crisis States Research Centre.

DiPasquale, D. and Glaeser, E. (1998). The Los Angeles riot and the economics of urban unrest. *Journal of Urban Economics,* 43(January), pp. 52–78.

Doornbos, M. (1990). The African State in Academic Debate: Retrospect and Prospect. *Journal of Modern African Studies*, 28(2), pp. 179-198.

Dube, O. and Vargas, F. (2008). Commodity Price shocks and civil conflict: Evidence from Colombia. *The Review of Economic Studies*, 80 (4), pp. 1384–1421.

DuBrin, A. (2005). *Fundamentals of Organizational Behaviour: An Applied Perspective.* 3rd ed. Oxford: Pergamon Press.

Duvall, R. and Gurr, T. (1973). Civil Conflict in the 1960s: A Reciprocal Theoretical System with Parameter Estimates. *Comparative Political Studies*, 6, pp. 135-169.

Easterly, W. and Levine, R. (1997). Africa's growth tragedy; policies and ethnic divisions *Quarterly Journal of Economics*, 113, pp. 203-249.

Elbadawi, E. and Sambanis, N. (2000). Why are there so many civil wars in Africa? Understanding and preventing violent conflict. *Journal of African Economies*, 9(3), pp. 224-269

Englebert, P. and Ron, J. (2004). Primary commodities and war: Congo-Brazzaville's ambivalent resource curse. *Comparative Politics,* 37(1), pp. 61-81.

Englehart, N. (2009). State capacity, state failure, and human rights. *Journal of Peace Research,* 46(2), pp. 163–180.

Esteban, J. and Ray, D. (1994). On the Measurement of Polarization. *Econometrica,* 62(4), pp. 819–851.

Esteban, J. and Ray, D. (1999). Conflict and Distribution. *Journal of Economic Theory,* 87(2), pp. 379–415.

Esteban, J. and Ray, D. (2011). Linking conflict to inequality and polarization. *American Economic Review,* 101(4), pp. 1345–74.

Esteban, J., Mayoral, L., and Debraj, R. (2012). Ethnicity and Conflict: Theory and Facts *American Economic Review,* 102(4), pp. 1310-1342.

Fauvelle-Aymar, C. (1999). The political and tax capacity of government in developing countries. *Kyklos,* 52(3), pp. 391–413.

Fearon, J. and Laitin, D. (2003). Ethnicity, Insurgency and Civil War. *American Political Science Review,* 91(1), pp. 75–90.

Fearon, J. (2005). Primary commodities exports and civil war. *Journal of Conflict Resolution,* 49(4), pp. 483–507.

Fish, M. and Kroenig, M. (2006). Diversity, Conflict and Democracy: Some Evidence from Eurasia and East Europe. *Democratisation,* 13(5), pp. 828-842.

Fjelde, H. and de Soysa, I. (2009). Coercion, co-optation, or cooperation? State capacity and the risk of civil war, 1961–2004. *Conflict Management and Peace Science,* 26(1), pp. 5–25.

Fjelde, H. (2010). Generals, Dictators, and Kings: Authoritarian Regimes and Civil Conflict, 1973–2004. *Conflict Management and Peace Science,* 27(3), pp. 195–218.

Fjelde, H. and Nilsson, D. (2012). Rebels Against Rebels: Explaining Violence Between Rebel Groups. *Journal of Conflict Resolution,* 56(4), pp. 604–628.

Fjelde, H. and Østby, G. (2012). Economic Inequality and Inter-group Conflicts in Africa. In: *Democracy as Idea and Practice conference*. Oslo: University of Oslo.

Fjelde, H. and Nilsson, D. (2012). Rebels Against Rebels: Explaining Violence between rebel Groups. *Journal of Conflict Resolution,* 56(4), pp. 604-628.

Fox, J. (2000). Religious causes of ethnic discrimination. *Nationalism and Ethnic Politics*, 3(3), pp. 1-19.

Fox, J. (2000). Religious causes of discrimination against ethno-religious minorities. *International Studies Quarterly*, 44, pp. 423-450.

_____, (2000). The effects of religious discrimination on ethnic protest and rebellion. *Journal of Conflict Studies*, 20, pp. 16-43.

_____, (2001). Are Middle-East conflicts more religious? *The Middle East Quarterly*, 8(4), pp. 31-40.

Fox, J. and Sandler, S. (2003). Quantifying religion: Toward building more effective ways of measuring religious influence on state-level behaviour. *Journal of Church and State*, 45(2), pp. 559-588.

Francis, D. (2006). Peace and Conflict Studies: An African Overview of Basic Concepts. In: Best, S.G., ed. *Introduction to peace and Conflicts Studies in West Africa*. Ibadan: Spectrum Books Limited.

Fukuyama, F. (2005). Stateness First. *Journal of Democracy,* 16(1), pp. 84-88.

_____, (2013). What is Governance? *Governance: An International Journal of Policy, Administration, and Institutions,* 26(2), pp. 347-362.

Gelb, A. (1988). *Oil Windfalls: Blessing or Curse?* Oxford: Oxford University Press.

Gelbard, E., Delechat, C., Jacoby, U., Pani, M., Hussain, M., Ramirez, G., Xu, R., Fuli, E., and Mulaj, D. (2015). *Building Resilience in Sub-Saharan Africa's Fragile States*. Washington DC: International Monetary Fund.

Gleditsch, P., Hegre, H., and Strand, H. (2009). Democracy and Civil War. In: Midlarsky, M. and Arbor, A. ed. *Handbook of War Studies III*. Michigan: University of Michigan Press. pp. 155–192.

Gleditsch, K. (2002). Expanded Trade and GDP Data. *Journal of Conflict Resolution*, 46(5), pp. 712-724.

Gleditsch, K. and Ruggeri, A. (2010). Political opportunity structures, democracy, and civil war. *Journal of Peace Research,* 47(3), pp. 299–310.

Gleditsch, N., Wallensteen, P., Eriksson, M., Sollenberg, M., and Strand, H. (2002). Armed conflict 1946–2001: A new dataset. *Journal of Peace Research*, 39(5), pp. 615–637.

Gofwen, R. (2004). *Religious conflicts in northern Nigeria and nation building*: *The throes of two decades 1980–2000*. Kaduna: Human Rights Monitor.

Goldstein, J. (1994). *International Relations*. New York: Harper Collins College Publishers.

Gould, D. and Gruben, W. (2001). The role of intellectual property rights in economic growth *Journal of Development Economics,* 48(2), pp. 323-350.

Granato, J., Inglehart, R., and Leblang, D. (1996). The Effect of Cultural Values on Economic Development: Theory, Hypotheses, and Some Empirical Tests. *American Journal of Political Science*, 40, pp. 607–631.

Gurr, T. (1974). Persistence and Change in Political Systems, 1800-1971. *American Political Science Review*, 68(4), pp. 1482-1504.

Habermas, J. (1976). *Legitimation Crisis.* London: Heinemann.

Hameiri, S. (2007). Failed states or a failed paradigm? State capacity and the limits of institutionalism. *Journal of International Relations and Development*, 10(2), pp. 122-149.

Harms, P. and Zink, S. (2005). Growing into and out of social conflict. *Economica*, 72, pp. 267–286.

Hauge, W. and Tanja E. (1993). Beyond Environmental Scarcity: Causal Pathways to Conflict, *Journal of Peace Research*, 35(3), pp. 299-317.

Hegre, H., Ellingsen, T., Gates, S., and Gleditsch, P. (2001). Toward a democratic civil peace? Democracy, political change and civil war, 1816–1992. *American Political Science Review,* 95(1), pp. 33–48.

Hegre, H. and Sambanis, N. (2006). Sensitivity Analysis of Empirical Results on Civil War Onset. *Journal of Conflict Resolution,* 50(4), pp.508-535

Henderson, E. and Singer, J. (2000). Civil war in the post-colonial world, 1946–1992. *Journal of Peace Research,* 37(3), pp. 275–299.

Hendrix, S. (2010). Measuring state capacity: Theoretical and empirical implications for the study of civil war. *Journal of Peace Research,* 47(3), pp. 273–285.

Hendrix, C. and Salehyan, I. (2012). Climate change, rainfall, and social conflict in Africa. *Journal of Peace Research,* 49(1), pp. 35–50.

Herbst, J. (2000). *States and Power in Africa: Comparative Lessons in Authority and Control.* Princeton: Princeton University Press.

Herbst, J. (2004). African militaries and rebellion: The political economy of threat and combat effectiveness. *Journal of Peace Research*, 41(3), pp. 357–369.

Hidalgo, D., Naidu, S., Nichter, S., and Richardson, N. (2010). Occupational choices: Economic determinants of land invasions. *Review of Economics and Statistics,* 92(3), pp. 505–523.

Hirshleifer, J. (1989). The dimensions of power as illustrated in a steady-state model of conflict. *In A Rand Note*. Santa Monica CA: RAND.

_____, (1991). The paradox of power. *Economics and Politics,* 3, pp. 177-200.

_____, (1995). Anarchy and its breakdown. *Journal of Political Economy*, 103, pp. 26-52.

Hirschman, A. (1982). Rival interpretations of market society: Civilizing, destructive, or feeble. *Journal of Economic Literature,* 20, pp. 1463-1484.

Hironaka, A. (2005). *Never-ending Wars: The International Community, Weak States, and the Perpetuation of Civil War*. Cambridge MA: Harvard University Press.

Hojman, D. (1996). Poverty and Inequality in Chile: Are Democratic Politics and Neoliberal Economics Good for You? *Journal of Inter-American Studies and World Affairs,* 38, pp. 73–96.

Homer-Dixon, T. (1999). *Environment, Scarcity, and Violence*. Princeton NJ.: Princeton University Press.

Hosmer, D. and Lemeshow, S. (2000). *Applied Logistics regression*. 2nd ed. New York: Wiley-Blackwell.

Humphreys, M. (2005). Natural Resources, Conflict, and Conflict Resolution. *Journal of Conflict Resolution,* 49(4), pp. 508–537.

Humphreys, M., Sachs, J., and Stiglitz, J. (2007). *Escaping the Resource Curse*. New York: Columbia University Press.

Humphreys, M. and Weinstein, J. (2008). Who fights? The Determinants of Participation in Civil War. *American Journal of Political Science*, 52(2), pp. 436-455.

Huntington, S. (1968). *Political Order in Changing Societies*. New Haven CT: Yale University Press.

Huntington, S. (1978). The Bases of Accommodation. *Foreign Affairs,* 46(4), pp. 642-656.

Ikelegbe, A. (2001). Civil Society, Oil and Conflict in the Niger Delta Region of Nigeria: Ramifications of Civil Society for a Regional Resource Struggle. *Journal of Modern African Studies,* 39(3), pp. 437–469.

Iyoboyi, M. (2014). Economic Growth and Conflicts: Evidence from Nigeria. *Journal of Sustainable Development Studies*, 5(2), pp. 116-144.

Institute for Peace and Conflict Resolution (2003). *Strategic Conflict Assessment: Consolidated Zonal Reports Nigeria.* Abuja: Federal Government of Nigeria.

Jackson, R. (2000). Managing Africa's Violent Conflicts. *Peace and Change*, 25(2), pp. 208-224.

_____. (2002). Violent internal conflict and the African state: towards a framework of analysis. *Journal of Contemporary African Studies*, 20(1), pp. 29-52.

Jackson, R. and Rosberg, C. (1982). Why Africa's Weak States Persist: The Empirical and the Juridical in Statehood. *World Politics,* 35(1), pp. 1–24.

Jervis, R. and Snyder, J. (1999). Civil war and the security dilemma. In: Walter, B. and Snyder, J. ed. *Civil War, Insecurity and Intervention*. New York: Columbia University.

Jike, V. T. (2003). Globalisation and environmental degradation in the Nigeria Delta. *Journal of Globalisation and International Studies*, 1(1), pp. 43-56.

Joseph, R. (1999). Africa, 1990–1997: From Abertura to Closure. *Democratization in Africa.* Baltimore: Johns Hopkins University Press.

Juergensmeyer, M. (2003). *Terror in the mind of God: The global rise of religious violence*. Berkeley CA: University of California Press.

Kaldor, M. (1999). *New and Old Wars: Organised Violence in a Global Era*. Cambridge UK: Polity Press.

Kalyvas, N. (2003). Action and identity in civil wars. *Perspectives on Politics,* 1(3), pp. 475–494.

_____, (2007). *The Logic of Violence in Civil War*. New York: Cambridge University Press.

Keen, D. (1998). The economic functions of violence in civil wars. *The Adelphi Papers,* 320, pp. 1-89.

Kehl, J. (2010). Oil, Water, Blood and Diamonds: International Intervention in Resource Disputes. *International Negotiation*, 15, pp. 391-412.

Kellas, G. (1998). *The Politics of Nationalism and Ethnicity.* 2nd ed. London: Macmillan Press Ltd.

Kennedy, P. (1987). *The Rise and Fall of the Great Powers: Economic Change and Military Conflict from 1500 to 2000*. New York: Random House.

Klare, M. (2001). *Resource Wars: The New Landscape of Global Conflict*. New York NY: Metropolitan Books.

_____, (2004). *Blood and oil: The dangers and consequences of America's growing dependency on imported petroleum*. New York NY: Metropolitan Books.

Kocher, M. (2010). State Capacity as a Conceptual Variable. *Yale Journal of International Affairs,* 5(2), pp. 137-145.

Koubi, V., Bernauer, T., Kalbhenn, A., and Spilker, G. (2012). Climate variability, economic growth, and civil conflict. *Journal of Peace Research,* 49(1), pp. 113–127.

Kristin, F. (2000). A Reassessment of the Relationship between Inequality and Growth. *American Economic Review,* 90, pp. 869-887.

Kurečić, P., Hunjet, A., and Perec, I. (2015). Effects of Dependence on Exports of Natural Resources: Common Features and Regional Differences between Highly Dependent States. In: Vranešević, T. ed. *3rd M-Sphere Conference Book of Papers.* Zagreb: Association for Promotion of Multidisciplinary in Science and Business.

Laue, J. (1990). The emergence and institutionalization of third party roles in conflict. In: John, B. and Frank, D. eds. *Conflict: readings in management and resolution*. Basingstoke: Palgrave Macmillan.

Le Billon, P. (2001). The Political Ecology of War: Natural Resources and Armed Conflict. *Political Geography,* 20(5), pp. 561-584.

Le Billon, P. (2008). Diamond Wars? Conflict Diamonds and Geographies of Resource Wars. *Annals of the Association of American Geographers*, 98(2), pp. 345-372.

Levy, B. and Kpundeh, S. (2004). *Building State Capacity in Africa: New Approaches, Emerging Lessons.* Washington DC: World Bank.

Lieberman, E. (2002). Taxation data as indicators of state–society relations: Possibilities and pitfalls in cross-national research. *Studies in Comparative and International Development,* 36(4), pp. 89–115.

Lindberg, E. (2013). *War in Mali: Background study and annotated bibliography*. Uppsala: Nordiska Afrikainstitutet.

Lindberg, S. I. (2003). It's Our Time to 'Chop': Do Elections in Africa Feed NeoPatrimonialism rather than Counter-Act It?. *Democratization*, 10(2), pp. 121-140.

Little, D. (2011). Religion, Nationalism and Intolerance. In: Sisk, T. ed. *Between Terror and Tolerance: Religious Leaders, Conflict, and Peacemaking*. Washington DC: Georgetown University Press.

López-Alves, F. (2000). State Formation and Democracy in Latin America. *Journal of Latin American Studies,* 34(1), pp. 165-218.

Londono, J. (1996). *Poverty, Inequality, and Human Capital Development in Latin America, 1950– 2025*. Washington DC: World Bank.

Long, J. and Freese, J. (2006). *Regression Models for categorical dependent variables using Stata*. 2nd ed. College Station TX: Stata Press.

Lubeck, P. (1985). Islamic Protest under Semi-Industrial Capitalism. *Journal of the International African Institute,* 55(4), pp. 369-389.

Lujala, P., Gleditsch, N., and Gilmore, E. (2005). A Diamond Course? Civil War and a Lootable Resource. *Journal of Conflict Resolution,* 49(4), pp. 538-562.

Lujala, P. (2010). The Spoils of Nature: Armed civil conflict and rebel access to natural resources. *Journal of Peace Research*, 47(1), pp. 15-28.

Lyle, B. (2005). Blood for Oil: Secession, Self-Determination, and Superpower Silence in Cabinda. *Washington University Global Studies Review*, 4(3), pp. 700-718.

MacCulloch, R. (2004). The impact of income on the taste for revolt. *American Journal of Political Science,* 48(4), pp. 830–848.

McAdam, D., Tarrow, S., and Tilly, C. (2001). *Dynamics of Contention*. Cambridge: Cambridge University Press.

McBride, M., Milante, G., and Skaperdas, S. (2011). Peace and War with Endogenous State Capacity. *Journal of Conflict Resolution*, 55(3), pp. 446-468.

McCauley, J. (2012). Africa's New Big Man Rule? Pentecostalism and Patronage in Ghana. *African Affairs*, 112(446), pp. 1-21.

Mansfield, E. and Snyder, J., (1995). Democratization and the Danger of War. *International Security,* 20(1), pp. 5-38.

McQuire, M. (1987). *Religion: The Social Context.* Belmont CA: Wadsworth Publishing.

Maregere, T. (2011). Religion: A source of conflict and a resource for peace. *Conflict Trends,* 1, pp. 17–23.

Mark, C. (2013). War and Conflict in Africa. *Australian Journal of International Affairs*, 67(2), pp. 249-251.

Marshall, G. and Jaggers, K. (2009). Polity IV Project: Political Regime Characteristics and Transitions 1800-2008.

Marshall, M., Gurr, T., and Jaggers, K. (2010). Polity IV Project Dataset Users' Manual. Severn, MD: Center for Systemic Peace.

Mearsheimer, J. (2001). *The Tragedy of Great Power Politics,* New York: W.W. Norton & Co., Inc.

Meredith, M. (2005). *The Fate of Africa: A History of Fifty Years of Independence*. New York: Public Affairs.

Merrouche, O. (2008). Landmines and Poverty: IV Evidence from Mozambique. *Peace Economics, Peace Science and Public Policy,* 14(1), pp. 1-8.

Midlarski, M. (1988). Rulers and the Ruled: Patterned Inequality and the Onset of Mass Political Violence. *American Political Science Review,* 82(2), pp. 491–509.

Migdal, J. (1998). Why Do So Many States Stay Intact?. In: Dauvergne, P. ed. *Weak and Strong States in Asia-Pacific Societies*. Melbourne: Allen and Unwin.

Miguel, E., Satyanath, S., and Sergenti, E. (2004). Economic shocks and civil conflict: an instrumental variables approach. *Journal of Political Economy,* 112(4), pp. 725–753.

Mkandawire, T. (2001). Thinking about developmental states in Africa. *Cambridge Journal of Economics,* 25(3), pp. 289-313.

Montalvo, J. and Reynal-Querol, M. (2005). Ethnic Polarization, Potential Conflict, and Civil Wars. *American Economic Review,* 95(3), pp. 796–816.

Most, B. and Harvey Starr, H. (1989). *Inquiry, Logic and International Politics*. Columbia SC: University of South Carolina Press.

Moore, M. (2001). *Political underdevelopment: What causes 'Bad Governance'? Working Paper.* Sussex : Institute for Development Studies.

Muller, E, and Seligson, M. (1987). Inequality and Insurgency. *American Political Science Review,* 81(2), pp. 425–452.

Muller, E., Seligson, M., Fu, H., and Midlarski**. M.** (1989). Land Inequality and Political Violence. *American Political Science Review,* 83(2), pp. 577–596.

Murdoch, J and Sandler, T. (2002). Civil Wars and Economic Growth: A Regional Comparison. *Defence and Peace Economics,* 13(6), pp. 451-464.

Nafziger, E. and Auvinen, J. (2002). Economic development, inequality, war, and state violence. *World Development,* 30(2), pp. 153–163.

Nathan, L. (2005). The frightful inadequacy of most of the statistics: a critique of Collier and Hoeffler on causes of civil war. *Crisis States Research Centre Discussion Paper 11*. London: London School of Economics.

Ndulu, B., Chakraboti, L., Lijane, L., Ramachandra, V., and Wolgin, J. (2007). *Challenges of African Growth: Opportunities, Constraints, and Strategic Directions.* Washington DC: The World Bank.

Nel, P. and Righarts, M. (2008). Natural disasters and the risk of violent civil conflict. *International Studies Quarterly,* 52(1), pp. 159–185.

Newsom, C. (2011). Conflict in the Niger Delta- More than a local affair. *United States Institute of Peace, Special report.*

North, D. and Weingast, B. (1989). Constitutions and commitment: The evolution of institutional governing public choice in seventeenth-century England. *Journal of Economic History,* 49(4), pp. 803–832.

Obasi, C. (2009). The role of religion on issues of conflict and peace. In: Ikejiani-Clarke, M. ed. *Peace studies and conflict resolution in Nigeria: A reader*. Ibadan: Spectrum Books.

Olukoshi, A. (2007).  From Colonialism to the New Millennium and Beyond. *IDS Bulletin*, 38, pp. 20–25.

Olsson, O. (2007). Conflict diamonds. *Journal of Development Economics,* 82(2), pp. 267-286.

Olzak, S. (1992). *The Dynamics of Ethnic Competition and Conflict*. Stanford CA: Stanford University Press.

Oneal, J. and Russett, B. (1999). Assessing the liberal peace with alternative specifications: Trade still reduces conflict. *Journal of Peace Research,* 36(3), pp. 423-432.

Onuoha, F. (2012). The audacity of the Boko Haram: Background, analysis and emerging trend. *Security Journal*, 25(2), pp. 134–151.

Orji, K. E. (2005). Historical consciousness and sustainable development in Nigeria: The experience of Niger Delta communities. *SOPHIA, An African Journal of Philosophy*, 7(2), pp. 208-222.

Orji, K. and Jaja, J. M. (2007). The Dilemma of Resource Control Principle and Conflict Resolution in Nigeria. *Multidisciplinary Journal of Research Development*, 9(2), pp. 1-9.

Osaghae E. and Suberu, R. (2005). A history of identities, violence, and stability in Nigeria. *Centre for Research on Inequality, Human Security and Ethnicity (CRISE), Working paper No. 6.*

Østby, G., Nordas, R., and Rød, J. (2009). Regional Inequalities and Civil Conflict in Sub-Saharan Africa. *International Studies Quarterly,* 53(2), pp. 301–324.

Ottaway, M. (2003). *Democracy Challenged: The Rise of Semi-Authoritarianism.* Washington DC: Carnegie Endowment for International Peace.

Ottervik M. (2013). Conceptualizing and Measuring State Capacity: Testing the Validity of Tax compliance as Measure of State Capacity. *The Quality of Government Institute, Working Paper Series,* 20.

Organski, A. and Jacek Kugler, J. (1980). *The War Ledger.* Chicago IL: Chicago University Press.

Payne, R. (1995). Freedom and the Environment. *Journal of Democracy,* 6(3), pp.41-55.

Philpott, D. (2007). Explaining the Political Ambivalence of Religion. *The American Political Science Review*, 101(3), pp. 505–25.

Polachek, S. and Sevastianova, D. (2010). Does Conflict Disrupt Growth? Evidence of the Relationship between Political Instability and National Economic Performance. *IZA Discussion Papers No. 4762.*

Powell, R. (2006). War as a commitment problem. *International Organization,* 60(1), pp. 169-203.

Powers, D. and Xie, Y. (2008). *Statistical Methods for Categorical Data Analysis.* Bingley: Emerald Group Publishing Ltd.

Powers, G. (2010). Religion and Peacebuilding. In: Philpott, D. and Powers, G. eds. *Strategies of Peace: Transforming Conflict in a Violent World.* Oxford: Oxford University Press.

Radaelli, C. and De Francesco, F. (2007). *Regulatory Quality in Europe: Concepts, Measures and Policy Processes.* Manchester: Manchester University Press.

Rahim, M. (2010). *Managing Conflict in Organizations.* Oxford: Transaction Publishers.

Regan, P. and Norton, D. (2005). Greed, Grievance and Mobilisation in Civil Wars. *Journal of Conflict Resolution,* 49(3), pp. 319-336.

Renner, M. (2002). The Anatomy of Resource Wars. *World Watch Paper 162.* Washington DC: World Watch Institute.

Reno, W. (1998). *Warlord politics and African states.* Boulder: Lynne Rienner.

Renner, M. (1997). *Fighting for Survival: Environmental Decline, Social Conflict, and the New Age of Insecurity.* 1st ed. New York: W. W. Norton & Company.

Reuveny, R. and Maxwell, J. (2001). Conflict and Renewable Resources. *Journal of Conflict Resolution,* 45(6), pp. 719-742.

Reynal-Querol, M. (2002). Political systems, stability and civil wars. *Defence and Peace Economics*, 13(6), pp. 465–483.

Reynolds, L. (1996). Some Sources of Income Inequality in Latin America. *Journal of Inter American Studies and World Affairs,* 38(2/3), pp. 39–46.

Rice, S. and Patrick, S. (2008). *Index of state weakness in the developing world*. Brookings Global Economy and Development.

Rodrik, D. (1999). Where Did All the Growth Go? External Shocks, Social Conflict, and Growth Collapses. *Journal of Economic Growth*, 4(4), pp. 385-412.

Rodrick, D. (2003). Growth Strategies. In: Aghion, P. & Durlauf, S. eds. *Handbook of Economic Growth*, 1(1) pp. 967-1014.

Rone, J. (2003). *Sudan, Oil, and Human Rights*. Washington DC: Human Rights Watch.

Ross, M. (2004). How do Natural Resources Influence Civil War? Evidence from Thirteen Cases. *International Organisation*, 58(1), pp. 35-67.

_____. (2004). What do we know about natural resources and civil war? *Journal of Peace Research,* 41(3), pp. 337-356.

_____. (2005). *Booty futures*, Working Paper, University of California, Los Angeles.

Rotberg, R. (2003). The Failure and Collapse of Nation-States: Breakdown, Prevention, and Repair. *When States Fail: Causes and Consequences*. New Jersey: Princeton University Press.

Rothchild, D. (1987). Hegemony and State Softness: Some Variations in Elite Responses. In: Ergas, Z. ed. *The African State in Transition*. London: Macmillan.

Rothstein, B. and Stolle, D. (2008). The State and Social Capital: An Institutional Theory of Generalised Trust. *Comparative Politics*, 40(4), pp. 441-459.

Saint-Paul, G. and Verdier, T. (1993). Education, Democracy and Growth. *Journal of Development Economics*, 42(2), pp. 399-407.

Sandbrook, R. (1988). Introduction: Roots of Failure, Seeds of Hope. In: Diamond, L., Linz, J., and Lipset, S. eds. *Democracy in Developing Countries: Africa*. Boulder CO: Lynne Rienner.

Sambanis, N. (2001). Do Ethnic and Non-ethnic Civil Wars have the same Causes? A theoretical and Empirical Enquiry (Part 1). *Journal of Conflict Resolution*, 45(3), pp. 259-282.

_____, (2002). A Review of Recent Advances and Future Directions in the Quantitative Literature on Civil War. *Defence and Peace Economics*, 13(3), pp. 215-243.

_____, (2004). What Is Civil War? Conceptual and Empirical Complexities of an Operational Definition. *Journal of Conflict Resolution,* 48(6), pp. 814–858.

_____, (2004). Using Case Studies to Expand Economic Models of Civil War. *Perspectives on Politics*, 2(2), pp. 259-279.

Sampson, I. (2012). Religious Violence in Nigeria: Causal Diagnosis and Strategic Recommendations to the State and Religious Communities. *African Journal on Conflict Resolution*, 12(1), pp. 103-134.

Sarsons, H. (2015). Rainfall and conflict: A cautionary tale. *Journal of Development Economics,* 115, pp. 62-72.

Savun, B. and Hays, J. (2011). Foreign Aid as a Counterterrorism Tool: Aid Delivery Channels, State Capacity, and NGOs. APSA Annual Meeting Paper.

Schaefer, M. (1957). Some considerations of population dynamics and economics in relation to the management of marine fisheries. *Journal of the Fisheries Research Board of Canada*, 14(4), pp. 669-681.

Schlenker, W. and Lobell D. (2010). Robust negative impacts of climate change on African agriculture. *Environmental Research Letters*, 5(1).

Schumpeter, J. (1991). The Crisis of the Tax State. In: Swedberg, R. ed. *The Economics and Sociology of Capitalism.* Princeton: Princeton University Press.

Sells, M. (2003). Crosses of Blood: Sacred Space, Religion, and Violence in Bosnia-Hercegovina. *Sociology of Religion,* 64(3), pp. 309–331.

Serneels, P. and Verpoorten, M. (2015). The Impact of Armed Conflict on Economic Performance: Evidence from Rwanda. *Journal of Conflict Resolution,* 59(4), pp. 555-592.

Skinner, Q. (1978). *Foundations of Modern Political Thought: Volume Two, The Age of Reformation*. London: Cambridge University Press.

Skocpol, T. (1979). *States and Social Revolutions: A Comparative Analysis of France, Russia, and China*. Cambridge: Cambridge University Press.

Slettebak, R. (2012). Don't blame the weather! Climate-related natural disasters and civil conflict. *Journal of Peace Research,* 49(1), pp. 163–176.

Snyder, R. and Bhavnani, R. (2005). Diamonds, blood and taxes: A revenue-centered framework for explaining political order. *Journal of Conflict Resolution,* 49(4), pp. 563-97.

Sobek, D. (2010). Masters of their domains: The role of state capacity in civil wars. *Journal of Peace Research*, 47(3), pp. 267-271.

Spilerman, S. (1970). The Causes of Racial Disturbances: A comparison of alternative explanations. *American Sociological Review*, 35(4), pp. 627-649.

Stewart, F. and FitzGerald, V. (2001). *War and Underdevelopment. Volume 1*: *The Economic and Social Consequences of Conflict*. Oxford: Oxford University Press.

Stubbs, R. (1999). War and Economic Development: Export-Oriented Industrialization in East and Southeast Asia. *Comparative Politics,* 31(1), pp. 337–55.

Sudula, U. (2012). Trade and Conflict in South Asia: Examining the Relationship between Trade Interdependence and Militarised Conflict. *Inquiries Journal,* 4(8), pp. 1-5.

Suzuki, S. and Krause, V. (2005). Determinants of civil war in post-colonial Asia, 1950–1992: The role of trade openness and economic development. *International Relations of the Asia-Pacific,* 5. pp. 31–57.

Svensson, I. (2013). One God, Many Wars: Religious Dimensions of Armed Conflict in the Middle East and North Africa. *Civil Wars*, 15(4), pp. 411-430.

Tarrow, S. (1994). *Power in Movements: Social Movements, Collective Action and Politics*. New York: Cambridge University Press.

Taydas, Z., Peksen, D., and James, P. (2010). Why do civil wars occur? Understanding the importance of institutional quality. *Civil Wars,* 12(3), pp. 195–217.

Taydas, Z. and Peksen, D. (2012). Can states buy peace? Social welfare spending and civil conflicts. *Journal of Peace Research,* 49(2), pp. 273-287.

Taylor, B. (2003). *Politics and the Russian Army: Civil–Military Relations*, *1689–2000*. Cambridge: Cambridge University Press.

Ter Harr, G. (2005). Religion: Source of Conflict or Resource for Peace?. In Ter Harr, G. and Busuttil, J. eds. *Bridge or Barrier: Religion, Violence, and Visions for Peace.* Leiden: Brill.

Theisen, O., Holterman, H., and Buhaug, H. (2012). Drought, political exclusion and civil war. *International Security,* 36(3), pp. 79–106.

Thies, C. (2010). Of rulers, rebels, and revenue: State capacity, civil war onset, and primary commodities. *Journal of Peace Research,* 47(3), pp. 321–332.

Thyne, C. (2006). ABC's, 123's, and the golden rule: The pacifying effect of education on civil war, 1980–1999. *International Studies Quarterly,* 50(4), pp. 733–754.

Tilly, C. (1978). *From Mobilization to Revolution*. Reading MA: Addison-Wesley.

Tusicisny, A. (2004). Civilizational Conflicts: More Frequent, Longer, and Bloodier?. *Journal of Peace Research,* 41(4), pp. 485–98.

Usman, O. (2011). Fiscal federalism and economic growth process in Nigeria. *European Journal of Business and Management*, 3(4), pp. 1-11.

Van de Walle, N. (2001). *African economies and the politics of permanent crisis, 1979-1999*. Cambridge: Cambridge University Press.

Van de Walle, N. (2012). Foreign Aid in Dangerous Places: The Donors and Mali's Democracy. *WIDER Working Paper 2012/061*. Helsinki: UNU-WIDER.

Van Vliet, M. (2014). Weak legislatures, failing MPs, and the collapse of democracy in Mali. *African Affairs*, 113(450), pp. 45-66.

Vally K., Thomas B., Anna K., and Spilker, G. (2012). Climate variability, economic growth, and civil conflict. *Journal of Peace Research,* 49(1), pp. 113-127.

Vreeland, J. (2008). The Effect of Political Regime on Civil War: Unpacking Anocracy. *Journal of Conflict Resolution,* 52(3), pp. 401-425.

Wallensteen, P. (2007). *Understanding conflict resolution*. London: Sage.

Wang, S. (1995). The Rise of the Regions: Fiscal Reform and the Decline of Central State Capacity in China. In Walder, A. ed. *The Waning of the Communist State: Economic Origins of Political Decline in China and Hungary.* Berkeley: University of California Press.

Wang, S. (2003). The Problem of State Weakness. *Journal of Democracy,* 14(1), pp. 36-42.

Wang, S. and Hu, A. (2001). *The Chinese Economy in Crisis: State Capacity and Tax Reform*. New York: M.E. Sharpe.

Weinstein, J. (2005). Resources and the information problem in rebel recruitment. *Journal of Conflict Resolution,* 49(4), pp. 598-624.

World Bank (2009). *World Development Indicators 2009*. Available at: https://data.worldbank.org/

Wright, Q. (1990). The nature of Conflict. In: John, B. and Frank, D. eds. *Conflict: readings in management and resolution*. Basingstoke: Palgrave Macmillan.

Yelsang, F. (2013). Agricultural land use conflict between landlords and migrants in Ghana: An examination of issues affecting Dagra migrants in the Brong Ahafo region. *European Scientific Journal*, 9(29), pp. 381-402

Young, J. (2003). Sudan: Liberation movements, regional armies, ethnic militias and peace. *Review of African Political Economy*, 30(97), pp. 423-434.

Yu-Hsiang, L. and Michaels, G. (2014). Do giant oilfield discoveries fuel internal armed conflicts? *Journal of Development Economics*, 110, pp. 139-157.

Zhang, X. and Kanbur, R. (2001). What Difference Do Polarisation Measures Make? An Application to China. *Journal of Development Studies*, 37(3), pp. 85-98.

# Appendix A

**Table A.1** - **World Bank list of economies (*June 2017)*

|  | **Economies** | **Income group** |
|---|---|---|
| 1 | Angola | Lower Middle Income |
| 2 | Benin | Low Income |
| 3 | Botswana | Upper Middle Income |
| 4 | Burkina Faso | Low Income |
| 5 | Burundi | Low Income |
| 6 | Cabo Verde | Lowe Middle Income |
| 7 | Cameroon | Lower Middle Income |
| 8 | Central African Republic | Low Income |
| 9 | Chad | Low Income |
| 10 | Comoros | Low Income |
| 11 | Democratic Rep. of Congo | Low Income |
| 12 | Republic of Congo | Lower Middle Income |
| 13 | Cote d'Ivoire | Lower Middle Income |
| 14 | Djibouti | Lower Middle Income |
| 15 | Equatorial Guinea | Upper Middle Income |
| 16 | Eritrea | Low Income |
| 17 | Ethiopia | Low Income |
| 18 | Gabon | Upper Middle Income |
| 19 | Gambia | Low Income |
| 20 | Ghana | Lower Middle Income |
| 21 | Guinea | Low Income |
| 22 | Guinea-Bissau | Low Income |
| 23 | Kenya | Lower Middle Income |
| 24 | Lesotho | Lower Middle Income |
| 25 | Liberia | Low Income |
| 26 | Madagascar | Low Income |
| 27 | Malawi | Low Income |
| 28 | Mali | Low Income |
| 29 | Mauritania | Lower Middle Income |
| 30 | Mauritius | Upper Middle Income |
| 31 | Mozambique | Low Income |
| 32 | Namibia | Upper Middle Income |
| 33 | Niger | Low Income |
| 34 | Nigeria | Lower Middle Income |
| 35 | Rwanda | Low Income |
| 36 | Sao Tome and Principe | Lower Middle Income |
| 37 | Senegal | Low Income |
| 38 | Seychelles | High Income |
| 39 | Sierra Leone | Low Income |
| 40 | Somalia | Low Income |
| 41 | South Africa | Upper Middle Income |

| | Economies | Income Level |
|---|---|---|
| 42 | south Sudan | Low Income |
| 43 | Sudan | Lower Middle Income |
| 44 | Swaziland | Lower Middle Income |
| 45 | Tanzania | Low Income |
| 46 | Togo | Low Income |
| 47 | Uganda | Low Income |
| 48 | Zambia | Lower Middle Income |
| 49 | Zimbabwe | Low Income |

# Appendix B

**Table B.1 - Conflict Events Types**

| Conflict Categories | Definition |
|---|---|
| Riots/Protest | A protest describes a non-violent, group public demonstration, often against a government institution. Rioting is a violent form of demonstration. |
| Violence against civilians | Violence against civilians occurs when any armed/violent group attacks civilians. By definition, civilians are unarmed and not engaged in political violence, Rebels, governments, militias, rioters can all commit violence against civilians. |
| Remote Violence | Remote violence refers to events in which the tool for engaging in conflict did not require the physical presence of the perpetrator. Remote violence notes that the main characteristic of an event is that a spatially removed group determines the time, place and victims of the attack. These include bombings, IED attacks, mortar and missile attacks, etc. Remote violence can be waged on both armed agents (e.g. an active rebel group; a military garrison) and civilians (e.g. a roadside bombing). |
| Battle-No change of territory | A battle between two violent armed groups where control of the contested location does not change. This is the correct event type if the government controls an area, fights with rebels and wins; if rebels control a location and maintain control after fighting with government forces; or if two militia groups are fighting. These battles are the most common activity and take place across a range of actors, including rebels, militias, and government forces, communal groups. |

| Battle Non-state actor overtakes territory | A battle where non-state actors win control of location. If, after fighting with another force, a non-state group acquires control, or if two non-state groups fight and the group that did not begin with control acquire it, this is the correct code. There are few cases where opposition groups other than rebels acquire territory. |
|---|---|
| Battle-Government regains territory | Battle in which the government regains control of a location. This event type is used solely for government re-acquisition of control. A small number of events of this type include militias operating on behalf of the government to regain territory outside of areas of a government direct control (for example, proxy militias in Somalia which hold territory independently but are allied with the Federal Government). |

**Table B.2 - INDEX OF STATE WEAKNESS IN SUB-SAHARAN AFRICA**

| Bottom Quintile |
|---|
| 2nd Quintile |
| 3rd Quintile |
| 4th Quintile |
| 5th Quintile |

| Rank | Country | Overall score | Economic | Political | Security | Social Welfare |
|---|---|---|---|---|---|---|
| 1 | Somalia | 0.52 | 0.00 | 0.00 | 1.37 | 0.70 |
| 2 | Congo, Dem. Rep. | 1.67 | 4.06 | 1.8 | 0.28 | 0.52 |
| 3 | Burundi | 3.21 | 5.01 | 3.46 | 2.95 | 1.43 |
| 4 | Sudan | 3.29 | 5.05 | 2.06 | 1.46 | 4.59 |
| 5 | Central Africa Rep. | 3.33 | 4.11 | 2.9 | 5.06 | 1.25 |
| 6 | Zimbabwe | 3.44 | 1.56 | 1.56 | 6.81 | 3.84 |
| 7 | Liberia | 3.64 | 3.39 | 3.91 | 6.01 | 1.25 |
| 8 | Cote D'Ivoire | 3.66 | 5.23 | 2.12 | 3.71 | 3.56 |
| 9 | Angola | 3.72 | 5.42 | 2.67 | 5.32 | 1.45 |
| 10 | Sierra Leone | 3.77 | 5.04 | 3.87 | 5.43 | 0.76 |
| 11 | Eritrea | 3.84 | 3.09 | 2.78 | 7.01 | 2.48 |
| 12 | Chad | 3.90 | 5.80 | 2.42 | 6.18 | 1.21 |

| Rank | Country | Overall score | Economic | Political | Security | Social welfare |
|------|---------|---------------|----------|-----------|----------|----------------|
| 13 | Guinea- Bissau | 4.16 | 5.22 | 3.83 | 5.96 | 1.69 |
| 14 | Ethiopia | 4.46 | 6.14 | 4.03 | 5.91 | 1.75 |
| 15 | Congo, Rep. | 4.56 | 5.08 | 2.77 | 6.45 | 3.95 |
| 16 | Niger | 4.60 | 5.45 | 4.69 | 7.33 | 0.94 |
| 17 | Guinea | 4.67 | 5.00 | 2.64 | 7.43 | 3.61 |
| 18 | Rwanda | 4.68 | 5.33 | 4.26 | 6.62 | 2.51 |
| 19 | Equatorial Guinea | 4.77 | 7.51 | 1.73 | 7.95 | 1.91 |
| 20 | Togo | 4.80 | 4.78 | 2.68 | 7.38 | 4.38 |
| 21 | Uganda | 4.86 | 5.78 | 4.55 | 4.89 | 4.23 |
| 22 | Nigeria | 4.88 | 5.39 | 3.51 | 5.37 | 5.24 |
| 23 | Cameroon | 5.12 | 5.78 | 3.09 | 7.54 | 4.07 |
| 24 | Comoros | 5.20 | 4.24 | 4.20 | 8.18 | 4.20 |
| 25 | Zambia | 5.23 | 5.08 | 4.59 | 8.15 | 3.11 |
| 26 | Mauritania | 5.30 | 6.23 | 4.34 | 6.38 | 4.24 |
| 27 | Djibouti | 5.31 | 5.05 | 3.69 | 8.21 | 4.29 |
| 28 | Mozambique | 5.32 | 5.60 | 5.33 | 8.35 | 1.98 |
| 29 | Swaziland | 5.33 | 5.57 | 3.65 | 8.28 | 3.80 |
| 30 | Burkina Faso | 5.51 | 6.30 | 4.87 | 8.30 | 2.59 |
| 31 | Malawi | 5.60 | 5.68 | 4.83 | 8.11 | 3.77 |
| 32 | Madagascar | 5.65 | 5.24 | 5.95 | 7.65 | 3.76 |
| Rank | Country | Overall score | Economic | Political | Security | Social Welfare |

| | | | | | |
|---|---|---|---|---|---|
| 33 | Kenya | 5.65 | 5.77 | 4.72 | 6.95 | 5.15 |
| 34 | Gambia | 5.79 | 5.26 | 4.54 | 8.29 | 5.06 |
| 35 | Mali | 5.85 | 6.33 | 6.16 | 8.49 | 2.43 |
| 36 | Lesotho | 5.88 | 4.59 | 6.40 | 8.35 | 4.18 |
| 37 | Tanzania | 5.94 | 6.38 | 5.41 | 8.08 | 3.89 |
| 38 | Sao-Tome & Principe | 6.17 | 4.86 | 5.77 | 7.95 | 6.12 |
| 39 | Gabon | 6.18 | 6.51 | 3.93 | 8.36 | 5.94 |
| 40 | Senegal | 6.28 | 6.38 | 5.97 | 7.96 | 4.82 |
| 41 | Benin | 6.36 | 6.25 | 5.82 | 8.51 | 4.86 |
| 42 | Namibia | 6.66 | 5.21 | 7.26 | 8.93 | 5.23 |
| 43 | Ghana | 6.72 | 5.92 | 7.02 | 8.44 | 5.48 |
| 44 | Botswana | 7.27 | 6.59 | 8.41 | 9.29 | 4.78 |
| 45 | South Africa | 7.50 | 6.89 | 8.07 | 7.72 | 7.33 |
| 46 | Cape Verde | 7.96 | 6.60 | 8.46 | 9.49 | 7.30 |
| 47 | Seychelles | 8.23 | 7.33 | 6.54 | 9.52 | 9.55 |
| 48 | Mauritius | 8.79 | 7.34 | 8.49 | 9.67 | 9.68 |

Source: Brookings Global Economy and Development

# Appendix C

**List of countries and natural resource endowments**

**Angola**

Petroleum, Diamonds, Iron Ore, Phosphates, Copper, Feldspar, Gold, Bauxite, Uranium

**Benin**

Small Offshore Oil Deposits, Limestone, Marble, Timber

**Botswana**

Diamonds, Copper, Nickel, Salt, Soda Ash, Potash, Coal, Iron Ore, Silver

**Burkina Faso**

Manganese, Limestone, Marble, Small Deposits of Gold, Phosphates, Pumice, Salt

**Burundi**

Nickel, Uranium, Rare Earth Oxides, Peat, Cobalt, Copper, Platinum, Vanadium, Arable Land, Hydropower, Niobium, Tantalum, Gold, Tin, Tungsten, Kaolin, Limestone

**Cameroon**

Petroleum, Bauxite, Iron Ore, Timber, Hydropower

**Cape Verde**

Salt, Balsalt Rock, Limestone, Kaolin, Fish, Clay, Gypsum

**Central African Republic**

Diamonds, Uranium, Timber, Gold, Oil, Hydropower

**Chad**

Petroleum, Uranium, Natron, Kaolin, Fish (Lake Chad), Gold, Limestone, Sand and Gravel, Salt

**Congo, Democratic Republic of**

Cobalt, Copper, Niobium, Tantalum, Petroleum, Industrial and Gem Diamonds, Gold, Silver, Zinc, Manganese, Tin, Uranium, Coal, Hydropower, Timber, Arable Land, Water

**Congo, Republic of**

Petroleum, Timber, Potash, Lead, Zinc, Uranium, Copper, Phosphates, Gold, Magnesium, Natural Gas, Hydropower

**Cote d'Ivoire (Ivory Coast)**

Petroleum, Natural Gas, Diamonds, Manganese, Iron Ore, Cobalt, Bauxite, Copper, Gold, Nickel, Tantalum, Silica Sand, Clay, Cocoa, Beans, Coffee, Palm Oil, Hydropower

**Djibouti**

Geothermal, Gold, Clay, Granite, Limestone, Marble, Salt, Diatomite, Gypsum, Pumice, Petroleum

**Egypt**

Petroleum, Natural Gas, Iron Ore, Phosphates, Manganese, Limestone, Gypsum, Talc, Asbestos, Lead, Zinc

**Equatorial Guinea**

Petroleum, Natural Gas, Timber, Gold, Bauxite, Diamonds, Tantalum, Sand and Gravel, Clay

**Eritrea**

Potash, Gold, Zinc, Copper, Salt, Possibly Natural Gas and Oil, Fish

**Ethiopia**

Small Reserves of Gold, Platinum, Copper, Potash, Natural Gas, Hydropower

**Gabon**

Petroleum, Natural Gas, Diamonds, Niobium, Manganese, Uranium, Gold, Timber, Iron Ore, Hydropower

**Gambia, The**

Fish, Titanium (Rutile and Ilmenite), Tin, Zircon, Siliva Sand, Clay, Petroleum

**Ghana**

Gold, Timber, Industrial Diamonds, Bauxite, Manganese, Fish, Rubber, Hydropower, Petroleum, Silver, Salt, Limestone

**Guinea**

Bauxite, Iron Ore, Diamonds, Gold, Uranium, Hydropower, Fish, Salt

**Guinea-Bissau**

Fish, Timber, Phosphates, Bauxite, Clay, Granite, Limestone, Petroleum

**Kenya**

Limestone, Soda Ash, Salt, Gemstones, Fluorspar, Zinc, Diatomite, Gypsum, Wildlife, Hydropower

**Lesotho**

Water, Agricultural and Grazing Land, Diamonds, Sand, Clay, Building Stone

**Liberia**

Iron Ore, Timber, Diamonds, Gold, Hydropower

**Libya**

Petroleum, Natural Gas, Gypsum

**Madagascar**

Graphite, Chromite, Coal, Bauxite, Salt, Quartz, Tar Sands, Semiprecious Stones, Mica, Fish, Hydropower

**Malawi**

Limestone, Arable Land, Hydropower, Uranium, Coal, Bauxite

**Mali**

Gold, Phosphates, Kaolin, Salt, Limestone, Uranium, Gypsum, Granite, Hydropower, Bauxite, Iron Ore, Manganese, Tin, Copper

**Mauritania**

Iron Ore, Gypsum, Copper, Phosphate, Diamonds, Gold, Oil, Fish

**Mauritius**

Arable Land, Fish

**Morocco**

Phosphates, Iron Ore, Manganese, Lead, Zinc, Fish, Salt

**Mozambique**

Coal, Titanium, Natural Gas, Hydropower, Tantalum, Graphite

**Namibia**

Diamonds, Copper, Uranium, Gold, Silver, Lead, Tin, Lithium, Cadmium, Tungsten, Zinc, Salt, Hydropower, Fish, Coal, Oil, Iron Ore

**Niger**

Uranium, Coal, Iron Ore, Tin, Phosphates, Gold, Molybdenum, Gypsum, Salt, Petroleum

**Nigeria**

Natural Gas, Petroleum, Tin, Iron Ore, Coal, Limestone, Niobium, Lead, Zinc, Arable Land

**Rwanda**

Gold, Cassiterite (Tin Ore), Wolframite (Tungsten Ore), Methane, Hydropower, Arable Land

**Sao Tome and Principe**

Fish, Hydropower

**Senegal**

Fish, Phosphates, Iron Ore

**Seychelles**

Fish, Copra, Cinnamon Trees

**Sierre Leone**

Diamonds, Titanium Ore, Bauxite, Iron Ore, Gold, Chromite

**Somalia**

Uranium, Iron Ore, Tin, Gypsum, Bauxite, Copper, Salt, Natural Gas, Oil

**South Africa**

Gold, Chromium, Antimony, Coal, Iron Ore, Manganese, Nickel, Phosphates, Tin, Uranium, Gem Diamonds, Platinum, Copper, Vanadium, Salt, Natural Gas

**Sudan**

Petroleum, Iron Ore, Copper, Chromium Ore,  Zinc, Tungsten, Mica, Silver, Gold, Hydropower

**Swaziland**

Asbestos, Coal, Clay, Cassiterite, Hydropower, forests, Gold, Diamonds, Quarry Stone, Talc

**Tanzania**

Tanzanite, Gemstones, Hydropower, Tin, Phosphates, Iron Ore, Coal, Diamonds, Gold, Natural Gas, Nickel

**Togo**

Phosphates, Limestone, Marble, Arable Land

**Tunisia**

Petroleum, Phosphates, Iron Ore, Lead, Zinc, Salt

**Uganda**

Copper, Cobalt, Hydropower, Limestone, Salt, Arable Land, Gold

**Zambia**

Copper, Cobalt, Zinc, Lead, Coal, Emeralds, Gold, Silver, Uranium, Hydropower

**Zimbabwe**

Coal, Chromium Ore, Asbestos, Gold, Nickel, Copper, Iron Ore, Vanadium, Lithium, Tin, Platinum