UNIVERSITY OF GHANA
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THE IMPACT OF FDI ON CONFLICT IN SUB-SAHARAN AFRICA

BY

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DECLARATION

I, **RICHARD AKOMATEY** do hereby declare that except for the references cited, which have been duly acknowledged, this thesis titled **"THE IMPACT OF FDI ON CONFLICT IN SUB-SAHARAN AFRICA"** is the product of my own research work in the Department of Finance, University of Ghana Business School, Legon, from August 2015 to July 2017. This thesis is not published or submitted either in part or in whole anywhere for the award of a degree in any other University.

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CERTIFICATION

We hereby certify that this thesis was supervised in accordance with procedures laid down by the University of Ghana.

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(SUPERVISOR)

DEDICATION

I commit this work first to God Almighty for seeing me through my Masters of Philosophy degree in Finance successfully. I further dedicate this study to my father, David Teye and my dear friend Donna Elikem Addai for their unflinching support through my two-year study in University of Ghana, Legon.

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ABSTRACT

This study primarily is aimed at evaluating the impact of FDI net inflows on conflict among countries in the SSA region using binary logistic regression technique. A panel data of 44 countries is analyzed over a sample period of 1990 to 2015 due to availability of data. Results from the study shows that FDI inflow significantly reduces the likelihood of conflict among countries in SSA. The outcome of the study also shows that variable such as democracy significantly reduces the likelihood of conflict negatively. However, variables such as natural resources, population, and unemployment significantly increase the likelihood of conflict. Ethnic fractionalization, GDP growth and education did not contribute significantly to determination conflict.

Furthermore, the average FDI net inflows to SSA have relatively been on the increase right from the end of the cold war (beginning of the study period) to the year 2015. It is also evident that, the average FDI net inflow to all conflict countries put together exceeded the average FDI net inflow to all non-conflict countries put together. But, in comparing individual countries, countries classified as non-conflict received more FDI on average than countries plagued conflict. The study recommends that regulators together with policy makers should put strategic measures in place to aid continuous increases in the amount of FDI net inflow to SSA substantially in order to help mitigate conflict within the sub-region.

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LIST OF ABBREVIATIONS

AIR	Africa Investment Report
ADI	African Development Indicators
CSCW	Centre for the Study of Civil War
C	Conflict
CMI	Crisis Management Initiative
ELF	Ethnic fractionalization
FDI	Foreign direct investment
FPR	Foreign Policy Report
GPI	Global Peace Index
GDP	Gross Domestic Product
GMM	Generalized Method of Moment
GBD	Global Birth and Death
G	Grievance
IDGs	International Development Goals
ICP	Institute for Conflict Transformation and Peacebuilding
IEP	Institute for Economics and Peace
RLF	Religious fractionalization
NEPAD	New Partnership for Africa's Development
MNCs	Multinational Companies
ODA	Official Development Assistance
OECD	Organization for Economic Co-operation and Development
O	Opportunity

P	The number of independent variables
PRIO	International Peace Research Institute, Oslo
PSE	Primary School Enrollment
POP	Population
Prob	Probability
PLO	Polity
SSA	Sub-Saharan Africa
SIPRI	Stockholm International Peace Research Institute
TNR	Total Natural Resource Rent
TRDP	Trade per GDP
UNCTAD	United Nation Conference on Trade and Development
UN	United Nations
UK	United Kingdom
UCDP	Uppsala Conflict Data Program
UEM	Unemployment
WDI	World Development Indicator
WANEP	West African Network for Peacebuilding
WIR	World Investment Report

CHAPTER ONE

INTRODUCTION

1.1 Background to the study

Over the past decades, various studies have asserted that civil war has replaced international wars as the most predominant form of large-scale violence (Einsiedel, 2014). Conflict, defined as a form of civil war that result in approximately 1000 or more deaths in a given year (Small & Singer, 1982; 1994; Collier & Hoeffler, 2004), has been the major news item on international scenes for some time now. Once civil war begins, it is difficult to end it and it can continue at a rate higher than international conflict (Collier, Rohner & Hoeffler, 2009). Sub-Sahara Africa (SSA) and the world at large experienced highest form of intra-conflict during the cold war (1947 to 1991), and it decreased afterwards for a short period and began to increase again (FPR, 2011). Einsiedel (2014) further indicates a tripling rise in civil war from four (4) to eleven (11) between the periods of 2007 and 2014 in SSA and the world at large. Reports from Global Birth and Death (GBD, 2013) indicate that in Sub-Sahara Africa (SSA), 61% die a violent death out of every one hundred thousand people every year.

The global peace index (GPI) also documents that the year 2015 was a bad year for international peace and security. It witnessed the maximum number of deaths out of international conflict for the past 25 years, persistently high levels of terrorism, and the highest number of refugees and displaced people since World War II (GPI, 2016). The 2015 foreign policy report (FPR), for instance, predicted that 2016 was unlikely to bring an improvement from the woes of 2015, thus indicating the continuum of civil wars. The GPI (2016) further points out that there are ten countries namely Costa Rica, Mauritius, Chile, Switzerland, Botswana, Japan, Vietnam, Qatar, Panama, and Uruguay which can be described as being free from conflicts. The global peace index

further identifies that the world's inability to resolve terrorist attacks and refugee crises are major sources of conflict and all these have contributed to the world being less peaceful (GPI, 2016).

Foreign direct investment (FDI) can be described as an external source of financing, usually involving a long term cross border investment mostly invested by citizens of one country in another country, where the business in a domestic economy is owned and managed by foreigners, where the foreign investor has a minimum of 10% voting power of the firm in question by law (OECD, 2008; World Bank, 2012). FDI, as described as exporting capital across borders, has increased globally over the last three decades (UNCTAD, 2016). Research confirms that FDI remains a stable and prominent source of capital inflows into developing economies in recent years (UNCTAD, 2016).

Away from the global trend, UNCTAD's (2013) report indicates that in 2012 Africa received an increased form of FDI ($50 billion) as compared to previous years and the sub-regions that benefited most were East Africa, North Africa and Central Africa. However, there were declines in FDI inflow into West Africa and the Southern part of the African continent. The 2016 UNCTAD report proposed that FDI inflow to SSA stood at $54.1 billion in the year 2015, a decrease of 7% over the previous year. In terms of FDI per GDP, SSA witnessed an improved inflow since 1996. It recorded a percentage of 2.4 in 2010 as against one percent in 1996 (African Development Indicators, 2016). Furthermore, FDI inflow to SSA increased by 64% to $87 billion which represents about thirteen percent of the worldwide FDI in 2014. Thus, from 2010 to 2014, FDI stood at $87bn due to the publication of a swarm of high value projects to be established in the sub-region (AIR, 2015).

The OECD (2002) reports that FDI increases the efficiency of resources and raises factor productivity especially in host countries. It is evident that FDI plays a vital role in economic growth

and development, especially in developing economies such as SSA (Carkovic & Levine, 2002). Despite the enormous benefits such as transfer of resources, technology transfer and spill-over effects into a host country, which eventually lead to an increase in productivity, conflict cases in SSA continue to increase (Einsiedel, 2014; GPI, 2016). One may ask whether these trends are related. These conflict cases are associated with social and developmental cost such as death, displacement of families, refugee crises, etc. as well as economic cost to SSA and the world at large. For instance, the economic cost of conflict to SSA and the world stood at $13.6 trillion, equivalent to $5 per day for every person on planet earth and 11 times the size of global FDI in 2015 (GPI, 2016). The cost of conflict also contributes to about 42.7 percent of Africa's population living on $1.90 or less a day (World Bank, 2016).

Most studies in the literature have focused much on the impact of conflict on FDI (conflict-FDI nexus) (Kobrin, 1979; Fatehi-Sedeh & Safizdeh, 1989; Olibe & Crumbley, 1997; Li, 2006; Suzuki & Miah, 2010; Driffield, Jones & Crotty, 2013; Ghunmi &Larkin, 2015). However, the focus on FDI-Civil (impact of FDI on conflict) war driven nexus remains few with Beriberi and Reuveny (2005) being one of the few papers to explore the impact of FDI on civil war among Less developed Countries (LDCs). This study therefore focuses on the impact of FDI on conflict in an African context from 1990 to 2015.

1.2 Problem statement

Historically, the number of nations that have experienced conflict cases in SSA and the world at large have increased considerably. It is also evident that the inflow of FDI to SSA has increased for almost two decades now (UNTACD, 2014). The literature on FDI explains that the inflow of FDI to SSA and to other parts of the globe has been accompanied by enormous benefits such as transfer of resources, improved access to local markets, technology transfer and spill-over effects

into a host country, which eventually lead to increases in productivity, local economic growth and business opportunities (Li, 2006; 2008; Lee & Mitchell, 2012). On the other hand, conflict cases also come with social, developmental and economic cost such abduction of individuals and families, death, poverty, unemployment, deep emotional scars and trauma, etc. The question one may ask is whether these trends are related, since FDI inflow is expected to continue to increase in SSA and the world at large (AIR, 2015; UNTACD, 2015) and conflict cases in SSA and the world at large is on the increase (Einsiedel, 2014).

Although the literature on FDI and conflict have been on the increase generally for some time now (conflict-FDI nexus studies (impact of conflict on FDI) being the most beneficiary), very few studies have explored the area of FDI's effect on conflict (FDI-Conflict nexus) in SSA. The theoretical literature on conflict and FDI further documents three main arguments. One set of the empirical literature argues that there is no statistical linkage between FDI and conflict (Bennett & Green, 1972; Kobrin, 1976; Fatehi-Sedeh & Safizadeh, 1989; Olibe & Crumbley, 1997; Phelan & Berg, 2003) and the second set of the empirical literature argues that conflict reduces FDI inflow (Nigh, 1985; Schneider & Frey, 1985; Porcano, 1993; Lucas, 1993; Wei, 1997). The last set of the empirical literature explains that FDI reduces the likelihood of conflict (Gartzke, Li & Boehmer, 2001; Rosecrance & Thompson, 2003; Barbieri & Reuveny 2005; Li, 2006; 2008; Lee & Mitchell, 2012). The study by Barbieri and Reuveny (2005) focused on 74 less developed countries from 1970 to 1999, whereas other scholars focused on FDI and interstate military conflict (Gartzke, Li & Boehmer, 2001; Li, 2008; Lee & Mitchell, 2012). Gartzke et al (2001) further focused on trade and direct investment as a way of resolving interstate conflict. The studies mentioned above also did not examine the Conflict-FDI nexus in an African context.

Despite the numerous studies on FDI, conflict and their related issues, there remains no clear conclusion on the relationship between the two variables. Again the studies cited above focused on FDI and interstate conflict, but did not explicitly examine the intrastate conflict and FDI, as well as Conflict-FDI nexus in the SSA context. Besides, the literature on FDI-Conflict nexus is scanty and the SSA region is structurally different from other regions in the world. For instance, most SSA countries have predominantly been exposed to intrastate conflict (civil wars, ethnic or tribal conflict) whiles other regions have usually experienced interstate conflict.

Other forms of structural differences include poor transport and communication infrastructure as compared to other regions like Latin America (Throp, 1998 & Herbst, 2000). Countries in SSA are further characterized by differences in amount of capital per worker, weak institutions, weak rule of law, low level of political stability and peace than other regions (Hall & Jones, 1999). Most African regulators and policymakers argue that lessons from, say, Latin America, Asia and other parts of the world do not necessarily apply to SSA because of contextual differences across the globe. But African leaders can learn from one another (Asiedu, 2006). Therefore, there is a need for an empirical study that focuses on SSA since it will have greater credibility among African policymakers. It is evident that previous empirical studies on FDI-Conflict debate are conflicting and most of these studies focused on FDI and inter- conflict, thus motivating this research. Furthermore, most of these studies have concentrated mainly on the effect of conflict on FDI. So this study intends to investigate the reverse. The current study, therefore, seeks to use a more rigorous analytical technique to help clarify the obscurity surrounding their relationship.

1.3 Research purpose

The ultimate purpose of this current study is to establish the awareness and help clarify the relationship between FDI and conflict, as well as examine the nature of FDI and conflict among

Sub-Saharan African countries. That is, this current study seeks to establish the impact of FDI on conflict in SSA.

1.4 Research objectives

The general objective is to determine the nature of FDI and conflict in Sub-Saharan Africa as well as examine the impact of FDI on Conflict among SSA countries. The exact objectives are:

1. To examine the nature of FDI and conflict in SSA.
2. To evaluate the impact of FDI on conflict in SSA.

1.5 Research questions

The questions that drive this current study include the following:

3. What is the nature of FDI and conflict in SSA?
4. Does FDI impact on conflict in SSA?

1.6 Significance of the Study

The outcome and findings of this current research are useful in three main respects. This study will serve as a document for scholarly reference, for policy implementation and for practice in the industry.

1.6.1 Academics Research

This current study adds to the existing literature on the link between Conflict and FDI which is usually skewed towards the usage of conflict as the explanatory variable. The main contribution of this study is to assess whether FDI inflow will reduce or increase the rate of conflict in SSA. Previous empirical studies on FDI-Conflict debate are conflicting, thus motivating this research. Besides, most of these studies have concentrated mainly on the impact of conflict on FDI. So this study intends to investigate the reverse. To the best of the researcher's knowledge, this research

serves as a novel study in investigating the effect of FDI and other covariates (GDP growth, unemployment, total natural resource rent, education, religious and ethnic fractionalization, and population) in an African context.

1.6.2 Government and other policy makers

This research provides a guide to policy makers regarding issues about FDI and their influence on conflict. Governments and institutions in the past have used strategies such as fair distribution of resources, arms control and diplomacy, poverty alleviation programs etc. to help control the occurrence and presence of conflict. However, this study brings to light the importance of FDI inflow in combating conflict. FDI inflow usually presents various benefits such as transfer of resources, improved access to local markets, technology transfer and spill-over effects into a host country, which eventually lead to increases in productivity, local economic growth and business opportunities that can help to mitigate conflict occurrences. Therefore, governments should focus on creating the enabling environment (improving human capital development, introducing tax cuts for foreign firms etc.) for SSA countries to attract FDI inflows, since it presence mitigate conflict occurrence.

1.6.3 Investors and other industry practitioners

Foreign investors, especially, are interested in safe environments as host to their investments. This study goes a long way to provide useful information on the effect of FDI on conflict so as to enable practitioners to make decisions that will not incite war leading to loss of their investments in the end.

1.7 Organization of the Study

This study is presented in five chapters. Chapter one gives an introductory aspect of the whole study. It highlights the background, problem statement, objectives of the study and research

questions. It further highlights the significance of the study, the questions this study intends to find answers to, scope and limitation of the study. This is followed by chapter two, which reviews the existing empirical literature on the subject matter. It also discusses the theoretical underpinning of the study. Chapter three presents the methodology. It provides the model, estimation technique and data used in the study. Chapter four also present the results of the analyzed data discussion of the results. Finally, chapter five summaries the findings from the study, draws varied conclusions, makes policy recommendation for stakeholders such as governments and investors and concludes the study.

1.8 Chapter Summary

This chapter has provided the background of the study as well as brief highlights of related issues. It has also explained the research purpose and stated the objectives the study seeks to achieve and the questions that it seeks to answer. It has further established the contribution of the study to policy, practice, the literature and future research. It has also highlighted the significance of the study as well as the organization of the content of the report.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter presents the relevant theoretical and empirical literature on the relationship between conflict and FDI. It provides the theoretical basis and the empirical benchmark for analyzing and discussing the outcome of this work. This section has four main subdivisions. The first sub-section explores the definition of terminologies and concepts by different authors. The second section considers reviews on the theoretical literature on the nexus between FDI and conflict, with an emphasis on three main contending theoretical arguments associated with FDI and conflict. The third section follows with a review of empirical research on the connection between FDI, conflict and the other independent variables. The final part of this chapter is devoted to general conclusions drawn from both theoretical and empirical literature reviewed.

2.2 Definition and Overview of Concepts

The terms and concepts include conflict, causes of conflict, FDI and types of FDI.

2.2.1 Conflict

In explaining the concept of conflict, the study followed the definition of civil war from the literature which is generally used and acceptable in the empirical literature (see Small & Singer, 1982; 1994; Collier & Hoeffler, 2004). These works have argued that Civil wars can be described as domestic conflicts that result in approximately 1000 or more deaths in a given year.

Kalyvas and Kenny (2007) further argue that the definition of civil war must consist of some key elements such as "(1) power- which is usually the motivating factor for armed entities in civil war; (2) an organized individuals or group that engage in the conflict; (3) violence which is the best and

only way by which the aim of the rebel group is achieved; (4) the civil war which should take place in the sovereign nation environment; and (5) at least the government who should be a participant in the fight, even though this last point is not a necessary condition". Eckstein (1965) argues that a better term that can be used to address the above situation is internal war. In today's world, however, the term civil war has been generally accepted as the lexicon for such occurrences. Civil war can further be described as armed combat internally within a nation or a state where rebels order subjects to a form of mutual authority at the outset of oppositions (Kalyvas, 2006).

2.2.2 Causes of conflict

Extant literature has identified several sources of conflict. Among these scholars, McGary and O'Leary (1995), Brown (2001) and Kaufman (2001), who examined the ethnic and non-ethnic dichotomy in relation to conflict and found that ethnicity is one of the main factors that cause conflict, argue that nations with several forms of ethnic groups have a higher chance of experiencing conflict as compared to nations with fewer forms of ethnic groups.

Additionally, Collier and Hoeffler (2004) have identified the following two sources of conflict theories: the economist's point of view and the political scientist's point of view. The economist's perspective to conflict looks at conflict from the angle of greed and argues that the occurrence of civil war is due to an unusual opportunity for building a rebel organization (Collier & Hoeffler, 2004) and these economic variables are more related to the possibility of rebellion. This position provides more explanatory power than the political science measure of conflict. The political scientist's view looks at civil war from a perspective of grievance. They explain conflict in terms of the motive behind it. Their variables are more related to grievances and have little explanatory power (Collier & Hoeffler, 2004). In another study, Fearon and Laitin (2004) have found that the

availability of natural resources such as gemstones, oil and narcotic producing plantations in a particular state or economy has the probability to cause civil war.

Fearon (2004) and Ross (2004) have also argued that the channel through which the presence of natural resources can cause civil war may be difficult to determine but may help to increase the spread of conflict. However, other studies have found that the cause of conflict goes beyond ethnic and non-ethnic dichotomy. These studies posit that polarization and ethnic division is the main contributing factor to conflict (Chandra & Wilkinson, 2008; Wimmer, Cederman & Min, 2009).

2.2.3 Foreign Direct Investment (FDI)

FDI is a form of inter-country investment in which the management of the enterprise in a domestic country is owned and controlled by individuals from a foreign country (World Bank, 2012). The WIR (2007) explains FDI as a form of a long-term investment in a domestic economy where the control of the firm and its resources is in the hands of the foreign investor or the parent firm in a foreign land. Similarly, FDI can be defined as a form of investment made with the goal of acquiring a lasting interest in a domestic enterprise or business with the purpose of having an effective stake in management.

UNCTAD (2016) describes FDI as a form of exporting capital across borders which has increased globally over the last three decades. FDI can further be described as an external source of financing which usually involves a long term cross border investment mostly invested by citizens of one country into another country, where the foreign investor has a minimum of 10% voting power of the firm in question by law (OECD, 2008). So from the above definitions, FDI can be described as a form of investment where firms and individuals in a foreign country make a direct investment in a form of resources in various forms in a domestic country in order to help produce or sell in such a domestic country with the goal of making profit and at the same time having

control in the management of the firms that will come out of their capital.

2.2.4 Forms of FDI Flows

Protsenko (2004) argues that firms may decide to invest their resource in foreign lands because of low input cost and global market trends. This purpose therefore gives rise to the two main types of FDI, namely: vertical and horizontal FDI. Horizontal FDI can be described as a form of investment where multinational companies (MNCs) reproduce the same products and services in different countries. That is, MNCs manufacture products and services the same as the ones they produce for their home market. MNCs fall on this form of FDI since the cost of exporting a product to another country may be more expensive than reproducing the same product or services in other countries. A typical example of horizontal FDI is Ford assembling cars in the United States, Taiwan, UK, France, Saudi Arabia and Australia.

Conversely, vertical integration refers to MNCs which have multiple production processes and are spread across different geographic regions. Thus, such MNCs separate their production processes vertically by outsourcing some of their production stages abroad. Vertical FDI can further be divided into backward vertical FDI where the parent MNCs establish and own their own sources of supply for their raw materials for production. However, forward vertical FDI is where a parent MNC relies on a foreign partner for inputs for the country's own production. A typical example of forward vertical FDI is when a Peugeot company (French automaker) only assembles cars and does not manufacture components in France, but in the UK, it can be said that Peugeot enters into components manufacturing through FDI.

Similarly, if the German automaker (Volkswagen) decides not to engage in car distribution in Germany but rather invest its capital in car dealership in Saudi Arabia, then it can be said that Volkswagen is engages in "downstream vertical FDI". Other kinds of FDI inflow can be outlined

in the form of direct investment where investors invest their capital in business and have control in the management of such business entities, mergers and acquisition, Greenfield investment, reinvesting profits earned from overseas operation and intra company loans.

2.3 Review of Theoretical Literature

Theoretically, this study is based on the theories that explain the concept of FDI-conflict nexus. Among these theories are: Greed and Grievance theory, Classical Liberal Theory (Liberalism) and Friedman's Golden Arches Theory.

2.3.1 Greed and Grievance theory

The literature on conflict explains that conflict can be explained from two main theoretical perspectives, namely: the greed and grievance theories, also known as motive and opportunity dichotomy. Among the few scholars who have employed and explained these theories are Hirshleifer (1995), Collier and Hoeffler (2002). The study by Collier and Hoeffler (2004), for instance, explains the two sources of conflict from the economist and political scientist's point of view. According to them economist's perspective explained conflict from the angle of greed and argued that the occurrence conflict is due to an unusual opportunity for building a rebel organization for the purposes of looting (Collier & Hoeffler, 2004). They further outlined that economic variables are more related to the possibility of rebellion and provide more explanatory power than the political science measure of civil war.

Conversely, political science theorists describe conflicts from the perspective of motive, where they consider variables, which are linked to grievances. The literature asserts that these variables have less explanatory power (Collier & Hoeffler, 2004). From the political literature perspective, international production leads to a reduction in dyadic (twofold) military dispute (Gartzke, Li, & Boehmer, 2001; Gartzke & Li, 2003).

2.3.2 Classical Liberal Theory (Liberalism)

The Classical Liberal Theory, also known as Liberalism or free market capitalism, was proposed in the 19th century and was championed by John Locke, Thomas Malthus, David Ricardo and Jean-Baptiste. These theorists identify Liberalism as a political ideology that advocates the freedom of individuals (example: Freedom of speech, religion, markets, political freedom, economic freedom, etc.) under the rule of law (limited government). The theory argues that economic interactions developed through free international markets make conflict more costly; thus, reducing the incentive for conflict (Li, 2008). The theory explains that individuals (citizens of a particular country or nations) who are economically interdependent are less likely to be involved in conflict in any form. This is due to the fact that conflict disrupts foreign investment, which can be costly to both rebels and investors. The effect of conflict, for instance, can lead to postponement of investment and further increase the income inequality gap and make people feel more greed and grievance.

On the other hand, the existence of higher form of interdependence among individuals within a nation can be mutually beneficial to all which can go a long way to increase peace among individuals and nations; thus, reducing the probability of conflict breaking out. This therefore implies that the probability of such nations engaging in conflict will reduce, due to the high opportunity cost associated with engaging in conflict since conflict deters foreign investment (Blomberg & Mody, 2005; Li, 2006; Suzuki & Miah, 2010).

2.3.3 Golden Arches Theory and the Dell Theory of Conflict Prevention

This theory, proposed by Thomas L. Friedman (1996), argues that “no two countries that have McDonalds’s (symbol of foreign investment) had fought war against each other since each got its McDonald’s’’. Thus, according to Friedman, countries that are at the high level of economic

development and have attained a middle class status and are strong enough to support a McDonald's network will not be interested in conflict of any form since it will be costly to engage in such acts, once it reaches the status of a "McDonald's country" (Friedman, 1996). Friedman further argues that the presence of globalization has made countries develop strong economic ties both within and between nations and this makes it costly to engage in war (higher opportunity cost of engaging in conflict). That is people in a particular domestic country will not be motivated to engage in fighting each other (internal conflict) for fear of the resultant economic and personal losses (Friedman, 1999) and this will rather induce interstate peace.

In 2008, Friedman upgraded the Golden Arches theory to the "Dell theory of Conflict Prevention which proposed that: No two countries that are both part of a major global supply chain (eg. Dell) will ever fight against each other as long as they are both part of the same global supply chain". He further explained that in addition to better standard of living as symbolized by McDonald's franchise, countries aim at experiencing massive globalization. Thus, countries do not only want to risk the trust of the multi-national companies which invest their resources in a host's local markets and include them in the global supply chain.

He further emphasizes that the Dell theory should not be interpreted as a guarantee that nations which are deeply involved in economic interdependence or global supply chains will not go to war with each other. This means governments of such nations and their citizens will be faced with a higher opportunity cost of engaging in fighting (substantial economic loss to consider as they fight each other). These losses may include long-term losses of the affected country's profitable participation at the global level (global supply chain). The theory, for instance, relates with how conflict prevention occurred between India and Pakistan during the period of 2001 to 2002 nuclear standoff where India was at risk of losing its global partners (Friedman, 2008). Another example

is the relationship between China and Taiwan. Because there is a strong and good relationship between the two states, a war seems very unlikely between the two nations today (Friedman, 2008).

2.4 Review of Empirical Studies on FDI and Conflict

This section presents related studies conducted in other jurisdictions (geographical areas), which are relevant to our study. It discusses and reviews studies on the connection between FDI and conflict, including works on total natural resource and conflict, democracy and conflict, ethnic and religious fractionalization and conflict, trade and conflict and growth and conflict.

2.4.1 Relationship between Conflict and FDI

The literature on Conflict and FDI has increased histrionically in recent times with many of the studies focusing on the impact of conflict on FDI while a few emphasize the impact of FDI on conflict (FDI-Conflict nexus). Studies on conflict and FDI have been investigated from diverse perspectives, with the dominant ones considering conflict as an explanatory variable. While some studies focus on conflict as the dependent variable and identify an inverse statistical significant association between conflict and FDI inflow, others provide ambiguous findings with no statistical significance between conflicts and FDI.

Pioneering the transnational terrorism and its connectivity with FDI is Enders and Sandler's (1996) work, which found that terrorism negatively, affects the inflow of FDI in Greece and Spain significantly. They argue that the detrimental effect is as a result of the atmosphere of intimidation and heightened financial risk that transnational terrorism fosters within the affected countries. More importantly, some of the empirical results that exist appear to be inconclusive. While some studies point out negative statistically significant effect of conflict on FDI inflow, others report more unclear results, and others found no statistical effect of conflict on FDI (Fatehi-Sedeh &

Safizadeh, 1989; Phelan & Berg, 2003). In an attempt to review empirical studies, our discussion is narrowed to several key findings on FDI and conflict. On the contrary, the literature in this area provides unlimited understanding to FDI and conflict from various perspectives (Phelan & Berg, 2003; Busse & Hefeker, 2007; Abadie & Gardeazabal, 2008) and so we explore these perspectives as follows.

2.4.1.1 No Statistical relationship between Conflict and FDI

Over the years, many scholars have focused on the impact of conflict on FDI, with much fewer studies on the impact of FDI on Conflict (Bennett & Green, 1972; Kobrin, 1976; Olibe & Crumbley 1997; Fatehi-Sedeh & Safizadeh, 1989; Phelan & Berg, 2003). Interestingly, these studies have postulated no significant linkage between conflict and FDI. This implies that conflict has no significant influence on FDI inflow. A study by Fatehi-Sedeh and Safizadeh (1989), which investigate the link between FDI and sociopolitical instability, explains that there is no connection between FDI and sociopolitical instability among countries in Central and South America. During their study, they employed 19 countries as sample and used multiple regression analysis with lagged independent variables between the periods of 1950 and 1980 and they found no statistically significant relationship between the two.

Similarly, Bennett and Green (1972) examined the association between political instability and FDI in 46 countries in which they categorize the countries into developed and less developed countries. Their study period covered 8 and 16 years and they too found no relationship between FDI and political instability, since the F-value was not significant. The study further found no relationship existing between political instability and investment allocation in Latin American nations though they found one correlation among Asian nations. This therefore implies that some international investors do not consider political instability in deciding where to invest their

resources since the studies above suggests that political instability generally does not influence allocation of FDI throughout the world. This therefore indicates that Bennett and Green's (1972) study contradicts international investors' belief that political instability is an important factor in deciding on investment sites.

Likewise, Kobrin (1976) conducted a study on FDI and political instability where he employed quantitative cross-national research techniques in investigating the link between FDI, social, economic and political aspects of the environment. His study also established no significant relationship between conflict and FDI but a strong relationship was identified between FDI flow and socio-economic variables (market variables).

2.4.1.2 Conflict reduces the inflow of FDI

On the other hand, some studies argue that conflict negatively affects the inflow of FDI (Nigh, 1985; Schneider & Frey, 1985; Porcano, 1993; Lucas, 1993; Wei, 1997; Fearon & Laitin, 2003; Ghobarah, Huth & Russett, 2003; Li & Wen, 2005; Blomberg & Mody, 2005; Busse & Hefeker, 2007; Abadie & Gardeazabal, 2008; Suliman & Mollick, 2009; Krifa-Schneider, 2010; Li & Vashchilko, 2010; Abu-Ghunmi & Larkin 2016). These studies have observed that conflict reduces the inflow of foreign direct investment. For instance, Lucas (1993) examines the sensitivity of direct investment flows to production cost in seven East and Southeast Asian nations over between 1960 and 1987. He has developed two theoretical models based on derived demand for capital of a profit maximizing, multiple product monopolists. His study employed the two versions of the models, namely: the basic form and extended version. The study points out that the basic version, which contains relative price and other endowment type's variables, was estimated in both logarithmic and linear form separately for the respective countries between 1960 and 1987.

On the other hand, the extended version consists of variables such as location, regulatory framework, political risk and market size. The result points out that direct foreign investment increases with greater costs within the investors home countries; that no similar effect occurs with respect to cost in rival host countries; and that concerns for political stability have overlain economic determinants (Lucas 1993). That is, four countries out of the total number of countries studied revealed that political stability has significant effects, indicating that FDI increases in the presence of good political events and decreases in the presence of political instability.

Other studies explain that conflicts negatively affect FDI due to the effects of conflicts, such as massive migration, repression, massive killing, destruction of infrastructure, and genocide that accompany civil war (Ghobarah, Huth & Russett, 2003; Fearon & Laitin, 2003; Li & Wen, 2005). In a similar fashion, Blomberg and Mody (2005) conducted a study on political violence and international investment using 43 host countries as sample from 1981 to 1998 and employing the system GMM model approach for their analysis. They found that violence in the form of terrorism, revolutions, and wars are harmful to international investment. This is mainly because violence in a source country discourages investment away from the parent nation to a safer host.

Li (2006), examined the linkage between political risk and political instability on FDI, and He observed that whereas political violence, an extreme form of political instability, affects FDI inflow negatively and that unanticipated civil war has negative consequences on the amount of resources investors would like to invest in a host country as well as the location to invest, anticipated civil war does not.

Likewise, a study by Busse and Hefeker (2007) on political risk, institutions and FDI among 83 developing countries over the period of 1984 and 2003, employing the Arellano-Bond GMM dynamic estimator approach made some interesting findings. They discovered that factors of

political risk (such as intra-country and inter-country conflict, ethnic tension, corruption, law and order, democratic accountability of government, government stability) are important determinates of FDI inflows. Thus, MNCs consider political risk when deciding where to invest their resources and capital in developing countries.

Nordal in 2001 also examine the link between country risk (political risk) and valuation of FDI. He used data from 1984 to 1996 and estimated his models by using the contingent claims valuation methodology and a sample of 152 countries. The findings of the study indicate country risk, particularly political risk, constitutes an important part of total risk that investors face when investing their resources and capital in foreign markets.

Additionally, Abadie and Gardeazabal's (2008) study provides similar observation and posits that terrorist risk adversely affects a country's ability to attract FDI inflow. Their results points out that increases in terrorist risk is associated with a fall in net FDI of about 5% of GDP. Likewise, Lutz and Lutz (2006) examine the effect of terrorism on FDI in 23 Latin American countries between 1969 and1988, and contends that terrorism negatively impacts on the inflow of foreign investment. This is strongly backed by Krifa-Schneider (2010) who examined the relationship between political risk, business climate and FDI inflows among 33 developing countries over a period of 1996 to 2008. They used the GMM approach and found that the lower the occurrence of political instability, the higher the inflow of FDI in host countries. Thus, foreign investors consider the level of political riskiness associated with a potential host country before investing the capital and resources in such countries.

Furthermore, Li and Vashchilko (2010) asserted empirically that military conflict and security alliances often cause changes in both government policies on foreign business and investor's expectation of political risk. They used 58 countries as sample and employed the system GMM

estimator for their analysis between the period of 1980 and 2000. They found that interstate military conflict significantly reduces bilateral investment, whereas security alliances significantly increase bilateral investment. Thus, investors are mindful of the kind of political risk that exists in potential FDI host countries, and this affects their decision to invest in foreign countries.

Abu-Ghunmi and Larkin (2016) examined the economic opportunity cost associated with countries located in conflict areas between 1980 and 2012 in Jordan. They employed the interrupted time series model, an unrestricted error correction model and the incremental capital output ratio (ICOR) and found that Jordan lost US$2.3 billion of FDI during the conflict periods which is higher than the annual inflow in periods they experienced peace. Thus, FDI inflow and conflict are negatively related in Jordan. This signifies that investors tend to internalize political violence when deciding to invest their capital in potential FDI host countries.

2.4.1.3 FDI reduces conflict occurrence

Rosecrance and Thompson (2003) investigated the link between trade, foreign investment and security by using a sample of 41 countries between the periods of 1950 and 1992. Their findings suggest that FDI links between nations have a greater probability to reduce the occurrence of conflict as compared to trade. Thus, trading between countries does not always reduce hostility between states as compared to FDI because FDI establishes a tie that is costlier and time consuming to break. This is because the inflow of FDI can lock businesses and recipient countries into a long-term investment relationship, especially when both parties are dealing with assets such as gold and diamond mines, oil wells, etc. The study further indicates that one main cause of conflict among nations is the existence of scarce factors of production in political command and therefore the more factors or resources existing the less likely that conflict will occur among nations in recent years.

Equally, Gartzke, Li and Boehmer (2001) in their study on interstate military conflict and FDI argued that economic integration (measured in terms of trade, FDI and financial openness) decreases the likelihood of wars. Thus, their study specifically reveals that trade and foreign investment into a host country have the propensity to reduce conflict. That is, benefits derived from foreign investment into host countries outweigh the incentives accompanied by the engagement in civil war. Here, the probability of civil war occurring will be significantly reduced. This is because citizens of the host country who before the investment by foreigners felt marginalized may not want to engage in violent protest since they will be better off than engaging in conflict. They are aware that the inflow of FDI will be accompanied by job opportunities, transfer of capital, technology, increases in management skills, increases in investment avenues, promotion of growth and reduction of income inequality. Thus, trade and FDI benefit both countries, whereas war hurts the conquered. So foreign investors should be encouraged to invest more in foreign lands, especially in conflict zones in order to help reduce the rate conflict in SSA.

Barbieri and Reuveny (2005) examined the effect of globalization on civil war by using a time series, large-N and cross sectional sample. They used a sample of 74 LDCs and employed data from 1970 to 1999 for their study. The results of their study points out that economic form of globalization reduce the probability of conflict occurrence. Thus, in measuring globalization with four caveats: trade, FDI, portfolio investments and internet, they found that FDI is a good determinant in reducing the probability of civil war onset among less developed countries. This is so because the inflow of FDI to a recipient country can lead to transfer of capital, technical know-how (management skills), technology, investment, growth and reduction in income inequality and poverty levels as well as increased opportunity cost of engaging in conflict.

Li (2008) explored the association between FDI and interstate military conflict by using 129 countries as sample from 1976 to 1996 and found that foreign investment mitigates interstate violence. This is so because some multi-national enterprises harbor the capacity and do not necessarily care too much about the risks for particular investment assets, since they can diversify some of their asserts by holding a market portfolio (Butler & Joaquin, 1998). This implies that some foreign firms are able to do well in the presence of conflict since they have the capacity to withstand the presence of conflict and so the presence of MNCs reduces the incentive to engage in war.

Likewise, a study by Lee and Mitchell (2012) on the relationship between FDI and interstate conflict over a sample period of 1970 to 2001 using logistic regression model for identified some noticeable causal mechanisms such as the declining benefit of territorial conquest and increasing opportunity cost of violence. In the end they found that increasing global FDI flows reduces the likelihood of militarized conflict occurrence since the inflow of FDI increases the opportunity cost of conflict occurrence. They further argue that high levels of bilateral FDI flows among two disputants decreases the chances of conflict intensification as well as improve the probability of peaceful management. Lee and Mitchell (2012) further found that improved information and signaling among nations with FDI leads to reduction in the occurrence of conflict since there is a chance for peaceful interstate agreement among such nations.

2.4.2 Natural Resources

In this sub-section our goal is to understand the current state of literature on conflict and natural resource abundance. Several empirical studies have been conducted on the issue of natural resources and conflicts in recent times. Some studies have argued that natural resource abundance in a host country is more of a curse than a blessing (Brunnschweiler, 2007). A lot of studies from

both the economic perspective (for example Collier & Hoeffler, 1998, 2004; De Soysa, 2000) and political science literature (e.g. Kaldor, 1999; Le Billion, 2001; Klare, 2001) propose that natural resource abundance plays a key role in the occurrence of internal armed conflict.

Le Billion (2001) study on natural resource and armed conflict documents that, nations that are resource dependent are more vulnerable to conflict than conventional nations that are relatively less dependent on natural resources. Therefore, the risk of violence is linked to the conflictuality of natural resources, political economies and the opportunities for armed insurgence resulting from looting. The study further indicates that beyond motivating or financing conflicts, the level of natural resource dependency, conflictuality and lootability tend to increase societies' vulnerability and the risk of armed conflict.

Also, Karl (2007) investigates the link between oil-led development and its social, political and economic consequences among oil producing countries across world. The study found that nations that depend on natural resources, especially oil for their livelihood, are mostly characterized among the most economically troubled, conflict prone and the most authoritarian in the world. Thus, countries that depend on natural resource as a major resource for development are characterized by slower economic growth, barrier to economic diversification, high incidence of corruption, exceptionally poor governance and high incidences of conflict.

Similarly, Ross (2004) examined the linkage between conflict and natural resource among 13 countries (both developed and developing nations) and used data from 1990 to 2000. The findings of the study point out that over their study period, the availability of natural resources (oil, nonfuel minerals and drugs) caused conflict. Thus, there is strong evidence that resource availability is a main cause of civil war and prolongs the occurrence of conflict. The study further found that there is a statistical relationship between conflict and the various types of primary commodities,

minerals and oil and lootable contrabands.

In another study, Welsch (2008) investigated the link between internal conflict and abundance of natural resources based on the relatively low threshold of 25 battle death over a study period of 1989 to 2002. The study developed and tested a framework (two sector models) which predicts that conflict varies directly with the size and value of lootable resource wealth and negatively with variables that increases labour productivity. In areas where labour is productive the availability of natural resource reduces occurrence of conflict. The study therefore proposes that there is general linkage between domestic conflict and natural resources availability since mineral resource endowment increases the probability that conflict will occur but agricultural products does not.

Fearon (2005) further examines the link between primary commodity export and civil war by employing a data set comprising 161 nations between 1960 and 1999. The result of the study points out that there exists an association between primary commodity export and internal conflict, but the form of correlation is neither strong nor robust. The study further points out countries which export oil have a higher civil risk since oil provides better financing opportunities for would-be rebels especially when such nations have a weaker state.

2.4.3 Ethnic Fractionalization

This sub-section is dedicated in reviewing the linkage between ethnicity and conflict. In 2012, Esteban, Mayoral and Ray conducted a study to examine the relationship between ethnicity and conflict and in his study, their investigation focused on the impact of ethnic divisions on conflict over a period 1960 to 2008. The study employed 138 countries as sample and the Esteban and Ray (1999) model of specification for estimation of it models for a total of 1125 observations. The study traced the links of conflict intensity in three indices of ethnic distribution: polarization, Gini-Greenberg and fractionalization index and found that conflict significantly correlates with

ethnicity. Specifically, the impact of ethnic fractionalization increases with conflict and as ethnic polarization increases, conflict also increases.

In a related study, Esteban and Ray (2008) examine the link between polarization, ethnicity and conflict by relying on the Esteban and Ray (1999) model in analyzing their data. In the end, their study found that countries which are classified as highly fractionalized are prone to conflict occurrence as well as the intensity of conflict existence. Specifically, they argue that the association between conflict and ethnic fractionalization is non-monotonic. The occurrence of conflict and the intensity moves in opposite directions.

Collier and Hoffler (2004) examined the connection between ethnicity and conflict in their popular "greed and grievances" and found that the existence of nations with highly dominant ethnicity structures increases the likelihood of the risk of conflict. This affirms Collier et al. (2003), whose theories stress that the centrality of mobilization based on group identity has the ability to increase the risk of conflict. It also further confirms the findings by Fearon and Latin (1996) on the linkage between conflict and ethnicity. In their study, they found that multicultural societies, apart from ethnicity, have the ability to generate conflict, other factors contributing to igniting conflict.

On the other hand, Fearon and Latin's (2003) study on ethnicity, insurgence and conflict among 127 conflict countries worldwide between the periods of 1945 and 1999 found that factors such as poverty, large populations, weak states, etc. have more predictive power on the risk of conflict occurrence than ethnic fractionalization ability to explain the risk of conflict occurrence.

2.4.4 Education

In this sub-section, we aim at understanding literature on conflict and education. The existing literature has focused on determining theoretically why education affect conflict (Collier, 2000; Elbadawi & Sambanis, 2000; Belloni, 2001; Murshed, 2002; Amamio, 2004; Collier, Hoeffler & Soderbom, 2008; Keen, 2005; Thyne, 2006; Østby, Nordås & Rød, 2009).

A study by Østby, Nordås and Rød (2009) on regional inequalities and intra-conflict in SSA countries employed 354 subnational regions among twenty two SSA countries. A Logit regression model with robust z-statistics was employed for analysis. The researchers found that nations with high levels of education are less likely to engage in conflict, but areas with low levels of education increases the chance of conflict. Thus, schooling increases social cohesion, tolerance and improves understanding among individuals, and therefore reduces the likelihood of conflict (Østby, Nordås & Rød, 2009).

Likewise, Thyne (2006) conducted a study titled "ABC's, 123's, and the Golden Rule: the pacifying effect of education on civil war, 1980–1999". The study examined the effect of educational expenditures, enrolment levels, and literacy rates on the probability of civil war onset from 1980 to 1999. The researcher used a time-series and cross-sectional data set consisting of 160 countries. The study employed the logit regression model for its analysis. The findings clearly showed that education prevents civil war. This was more prominent in the poorest countries and this backed the belief that education has a soothing effect on civil war.

In his conclusion, Thyne (2006) emphasized that education promotes peace through two proposed mechanisms. He initially argued that, education helps to improve people's lives thereby reducing grievances. Secondly, education comes with benefits such as political, economic and social stability, which helps to equip individuals for peaceful conflict

resolution. Thus, education reduces the probability of conflict occurrence. These findings resonate across several studies in the literature (e.g. Collier, 2000; Elbadawi & Sambanis, 2000; Belloni, 2001; Murshed, 2002; Amamio, 2004; Collier, Hoeffler & Soderbom, 2008; Keen, 2005).

2.4.6 GDP Growth

This sub-section also addresses the link between growth and conflict. Among the various authors who have conducted studies on the relationship between growth and conflict are Collier and Hoefler, (2004), Elbadawi and Hergre, (2008), Hergre, (2003). These scholars have proposed that growth has a significant impact on the risk of conflict. For instance, Collier and Hoeffler's (2004) study on the popular "greed and grievances" found that growth reduces the likelihood of conflict occurring. This is because growth increases the opportunity cost of engaging in conflict.

In another study, Elbadawi and Hegre (2008) examine globalization, economic shocks and internal armed conflict among countries in SSA and the rest of the world over a sample period of 1974 to 1992. During the study, they employed the calendar-time Cox regression model proposed by Raknerud and Hegre (1997) for their analysis and they employed GDP growth as one of their control variables. They found that growth is negatively significantly related to conflict.

Hegre and Sambanis, (2006) argue that consistent growth overtime helps in raising the average income levels. Thus, the likelihood of conflicts occurring in a high-income nation are low but are most common in low-income countries, since individuals in high-income countries tend to have higher average incomes as well as good standard of living, which increase the opportunity cost of engaging in conflict. However, Loayza and Soto (2002) argue that negative growth has the probability of increasing conflict, since it makes redistribution of resources especially in periods where there is stagnation or recession than periods experiencing increasing income levels.

2.4.7 Democracy

This sub-section reviews empirical studies on the relationship between conflict and democracy and among these studies are Collier and Hoefler (2004), who conducted a study on greed and grievances in civil war using a sample of 79 countries between the periods of 1960 to 1999. They found that political science variables such as democracy, ethnic and religious fractionalization etc. have less predictive power as compared to economic variables (education, GDP growth, income inequality). Among the variables they considered is democracy where they found that the democracy variable is inversely linked to conflict. They concluded that the democratic nature of a Country plays a role in decreasing the likelihood of conflict countries face (Collier & Hoefler, 2004). Thus, countries with strong government military capability increase the opportunity cost of people engaging in conflict, which helps in reducing conflict.

In another study, Gates, Hegre, Jones and Strand (2006) examine how political institutional structures affect political instability. Their study focused on a sample period from 1800 to 2000 and employed log-logistic regression estimation in their analysis. They found that the democratic nature of a state helps to reduce the risk of conflict. Thus, states classified as democratic are more stable than states which are autocratic.

2.5 Chapter Summary

This chapter has discussed the relevant theoretical and empirical literature on the relationship between conflict and FDI. The chapter focused on the definition of terminologies and concepts by different authors as well as reviewed the theoretical literature on the nexus between FDI and conflict. The empirical literature associated with conflict and additional variables that are widely discussed in existing literature and considered to impact conflict were also reviewed.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

The purpose of this chapter is to provide information on the various techniques used in assessing the relationship between FDI and conflict in SSA. The researcher provides information on the research design, the data used, and data source, the analytical framework for assessing the relationship between FDI and conflict, justifies the choice of the method as well as the sample period covered. The second part explains in details the specified econometric model adopted and the rationale behind it. The third part provides definition for the various variables used in the model as well as the sampling criteria, description of the source and type of data used in the study. The final part provides the concluding remarks.

3.2 Population and Sample Size

The study covered all the 52 countries in SSA as its population. However, due to data restriction, 44 countries were used. The 44 countries comprises of Angola, Burkina Faso, Botswana, Burundi, Benin, Cape Verde, Chad, Cameroon, Central Africa Republic, Comoros, Congo (Brazzaville), Cote D'Ivoire, Congo (Democratic Republic), Equatorial Guinea, Ethiopia, Eritrea, Gabon, The Gambia, Ghana, Guinea Bissau, Guinea, Kenya, Lesotho, Liberia, Malawi, Madagascar, Mali, Mauritius, Mauritania, Mozambique, Namibia, Nigeria, Niger, Rwanda, Senegal, Sierra Leone, South Africa, Sudan, Swaziland, Tanzania, Togo, Uganda, Zimbabwe, Zambia. An unbalanced panel data is employed due to the unavailability of full data on the variables used in the analysis. This is to ensure that, there is no loss of vital information and possibly more reliable results. Since the usage of an unbalanced data guarantees that results are not anchored on a particular period (Athansoglou, Brissimis & Delis, 2008).

Table 3.1: Countries Affected by Violent Conflict in Africa

No.	Country	Duration	Data Source
1	**Angola**	1990- 1994; 1998-2001	Collier, Hoeffler and Rohner, 2008
2	**Burundi**	1991- 1992; 1993-1998; 2000-2002	Collier, Hoeffler and Rohner, 2008
3	**Central African Republic**	1998-2000; 2005-2010	UN Mission (MINURCAT)
4	**Chad**	1990- n a; 2005-2010	UN Mission (MINURCAT)
5	**Congo Rep**	1997-1999	Collier, Hoeffler and Rohner, 2008
6	**Cote D'Ivoire**	2002-2005; 2010-2011	Collier, Hoeffler and Rohner, 2008, CIA World Factbook, Center for Systemic Peace
7	**Democratic Republic of Congo**	1993; 1996-2010	Collier, Hoeffler and Rohner, 2008, CIA World Factbook
8	**Eritrea**	1998-2000	UN Mission (UNMEE), CIA World Factbook
9	**Ethiopia**	1990- 1991; 1998-2000	UN Mission (UNMEE), CIA World Factbook
10	**Liberia**	1990; 1992- 1995; 1996-2003	Collier, Hoeffler and Rohner, 2008
11	**Rwanda**	1990-1994; 1998-2003; 2009	Collier, Hoeffler and Rohner, 2008
12	**Sierra Leonne**	1991-2002	Collier, Hoeffler and Rohner, 2008; CIA World Factbook
13	**Mozambique**	1990-1992	Collier, Hoeffler and Rohner, 2008
14	**Uganda**	1996-2001; 2004- n.a	Collier, Hoeffler and Rohner, 2008
15	**South Africa**	1990-1993; 1999-2002	Collier, Hoeffler and Rohner, 2008
16	**Sudan**	1990-1992; 1995- n a	Collier, Hoeffler and Rohner, 2008,
17	**Guinea Bissau**	1998- 1990	Collier, Hoeffler and Rohner, 2008, Center for Systemic Peace
18	**Nigeria**	2009- 2015	Center for Systemic Peace, Uppsala Conflict Data Program (UCDP)

Source: Author's Construct

3.3 Estimation Technique

The discussions in literature on the link between conflict and FDI revealed that, the latter can be described as a predictor of conflict (civil war) or interstate military conflict (Barbieri & Reuveny, 2005; Gartzke, Li & Boehmer, 2001; Lee & Mitchell, 2012) and vice versa (Busse & Hefeker, 2007; Abadie & Gardeazabal, 2008; Suliman & Mollick, 2009; Krifa-Schneider, 2010; Li & Vashchilko, 2010; Abu-Ghunmi & Larkin, 2016). The association between conflict and FDI can be negative, non-negative or neutral with supporting theories. So in order to ascertain this relationship between conflict and FDI among competing theories, the researcher employed econometric models. The present study therefore sought to evaluate the effect of FDI on conflict by adopting and modifying the model presented by (Collier & Hoeffler, 2001; 2004) in order to address the second objective. Concerning the first objective, the researcher employed descriptive tables and graphs to aid the description as presented in chapter three.

The study used a binary logistic regression model in analyzing the second objective since the response (dependent) variable is dichotomous and has two outcomes (dummy). Other studies which also used binary logistic regression and argued that, this method is fit include (Collier & Hoeffler, 2001; 2004; Barbieri & Reuveny, 2005; Gartzke, Li & Boehmer, 2001; Lee & Mitchell, 2012). The current study employs panel model for its analysis and this is based on the fact that the panel data model has the advantage of providing more information since it consists of both cross sectional information, time series information and also captures dynamic adjustment. Lastly, several data points are used in panel data model and it helps in improving the degrees of freedom in an analysis. It further helps to reduce the collinearity among the various regressors, thus improving the efficiency of economic estimates.

3.4 The General Model

Conflict is expressed as a function of Opportunity (O) and Grievance (G) variables (Collier & Hoefller, 2002; 2004) and the relationship can be written as

$C = f(O, G)$…….. (1)

From equation (1), some opportunity variables employed by Collier and Hoefller (2004; 2009) are primary commodity export, primary school enrolment, population, GDP growth, geographic dispersion, and diaspora. On the other hand, some grievance (motive) variables used consist of democracy, religious fractionalization, ethnic fractionalization, income inequality, land inequality, polarization, peace duration and mountainous terrain, (Collier & Hoefller, 2004; 2009). More precisely, the functional relationship between conflict and the other variables can be expressed in the form.

$\Upsilon = BX + U$……..... (2)

From equation (2), Υ is an nx1 vector of the dependent variable, X is an nxk matrix of the regressor, B is a kx1 coefficient vector and U is an nx1 error vector.

The researcher modified the conflict model (Collier & Hoefller, 2001; 2004) and expressed it as a function of several variables such as FDI, GDP growth (GDP), Primary School Enrollment (PSE), Total Natural Resource Rent (TNR), Unemployment (UEM), Democracy (DEM), Population (POP) and Ethnic fractionalization (ELF) in this studies model.

This can be express as

C = f (FDI, X, Z)…… (1b)

where X= (vector of control variables such as GDP growth, unemployment, primary school enrollment, population, total natural resource, democracy), Z= ethnic fractionalization.

Research shows that regression methods play an integral role in any data analysis, especially when the researcher want to establish a causal relationship between a response variable and one or more explanatory variables, with the dependent variable being discrete (takes on two or more possible value) in most instances. The use of logistic regression model has also become, in many fields, the standard method for analysis, especially when the dependent variable is a dummy or has two outcomes (Hosmer & Lemeshow, 2000). The key thing that distinguishes the logistic regression model from the linear regression model is the response variable (dependent variable), which in logistic regression is binary or dichotomous. This difference is reflected both in the choice of a parametric model and its assumptions. Therefore, once this difference is accounted for, then the method to be employed in an analysis using logistic regression follows the same general principles used in linear regression.

The logistic regression model is a special case of a generalized linear model in which the outcome is a nominal variable. Thus, in logistic regression analysis the model assumes the outcome (response) variable as a dummy or categorical variable (example: Y, is a dichotomous variable with the likelihood that conflict may occur or conflict may not occur as the outcome). And in this case, the option conflict not occurring is set to zero, and hence it is the reference category so that we are able to interpret the results relative to the reference group. The general form of the binary logit model can be expressed in the form:

$$Log_e = \frac{P=(Y\ |X_1\ ,\ldots,X_p)}{1-P(Y\ |X_1\ ,\ldots,X_p)} = Log_e\ \frac{\pi}{1-\pi} = \beta_0 + \beta_1 X_1 + \cdots \beta_p X_p = a + \ {}^{p}_{j-1}\beta_j X_j \ldots\ldots\ldots\ldots\ldots\ldots (3)$$

From equation (3), the model parameter estimates ($\beta_0, \beta_1\beta_2\beta_3, \ldots, \beta_p$) is obtained in order to be able to determine how well the model fits the data (Agresti, 2007). In this study, we focus on the binary logistic model whose response variable depends on a set of explanatory variables. This is

due to the fact that the response (dependent) variable is dichotomous and has two outcomes. A typical binary logistic model consists of a random component (say dependent variable Y from equation (3b), whose distribution is binomial), and a systematic component (explanatory variables Xs from equation (3b)) that can be continuous, discrete, or both and are linear in the parameters ($\beta 0 + \beta_1 X_1 + \ldots$).

More specifically, the model is given as

$$Y_1 = \beta_1 X_1 + \ldots . u_i \quad \ldots\ldots (3b)$$

The general form of the logistic regression model (Long & Freese, 2006) in equation (3) is given as;

$$\pi(x) = \frac{e^{\beta_0 + \beta_1 \chi_1 + \beta_2 \chi_2 + \cdots \beta_p \chi_p}}{(1 + e^{\beta_0 + \beta_1 \chi_1 + \beta_2 \chi_2 + \cdots \beta_p \chi_p})} \quad \ldots\ldots (4a)$$

$$1 - \pi(x) = \frac{1}{(1 + e^{\beta_0 + \beta_1 \chi_1 + \beta_2 \chi_2 + \cdots \beta_p \chi_p})} \quad \ldots\ldots (4b)$$

From equation (4a), P = the number of independent variables and Prob(Y=1/x) = $\pi\ x$ is equal to the conditional probability that the outcome is present (Prob(Y=1/x) = f(x) = $\hat{\rho}_{it} = \frac{e^{f(x)}}{(1 + e^{f(x)})}$). Prob(Y=0/x) = $1 - \pi(x)$ is equal to the conditional probability that the outcome is not present (Prob(Y=0/x) = g(x) = $\hat{\rho}_{it} = \frac{1}{(1 + e^{g(x)})}$).

The logit of the logistic regression model is given as;

$$g(x) = \beta_0 + \beta_1 \chi_1 + \beta_2 \chi_2 + \cdots \beta_p \chi_\rho \quad \ldots\ldots (5)$$

In which case the regression model is

$$\pi(x) = \frac{e^{g(x)}}{(1 + e^{g(x)})} \quad \text{..... (6)}$$

Now since the coefficient from a logistic model cannot be interpreted directly, we go further to estimate the marginal effects. In estimating the marginal effects, the continuous independent variables are computed at their means. But for the dummy or categorical variables the marginal effects were calculated as the discrete change in the independent variables from zero (0) to (1). Due to the nature of dependent variable (dummy), the model uses the binary logistic model. Thus, since the outcome variable has only two options, the study applied the binary logistic regression model because the dependent takes the value one or zero (Menard, 2002).

3.4.1 Model Assumption

The logit regression model does not follow the linear relationship between its variables of interest. That is the dependent variables, for instance, do not need to be normally distributed, or homogeneity of variance assumption or the variance do not have to be the same within categories, the normally distributed error terms are not assumed and the independent variable does not have to be interval or unbounded (Wright, 1995).

3.4.2 Specified Regression Model

As indicated above the study adopted and modified the model proposed by Collier and Hoeffler (2001; 2004) in equation (1b) order to examine the impact of FDI inflow on the effect of conflict among countries within Sub-Sahara over the sample period of 1990 to 2015. The researcher measures conflict as a dummy variable where one (1) indicates when a country has been affected by conflict and zero (0) otherwise (Barbieri & Reuveny, 2005; Collier & Hoeffler, 2001; 2004; Elbadawi & Sambanis, 2002; Reynal-Querol, 2002). Thus, all countries that have been affected by conflict are assigned a value of 1 and 0 otherwise.

The study employed some control variables such as population, total natural resources, GDP growth, democracy, ethnic fractionalization, primary school enrolment and unemployment (Collier & Hoeffler 2001; 2004; Elbaadwi & Sambanis, 2002; Fearon & Latin, 2003). In other to ensure that the results are not spurious, some of the explanatory variables in the study do not change with time (time invariant) and others do (vary with time). This study, focused on the binary logistic model whose response variable depends on a set of explanatory variables. The logistic regression is useful in this study because it helps in predicting whether there is conflict presence or no conflict based on a set of explanatory variables. The marginal effects are used for interpretation of results.

3.4.3 Model Specification for the Relationship between FDI and Conflict.

The dependent variable is dichotomous (binary) and is estimated as follows:

Conflict = Conflict Presence / no conflict ……... (4.1)

And this lies between 0 and 1. Therefore we employ the logit model, since the outcome variable is a binary. And we specify the model as follows:

The model can be specified as:

$C_{it} = \beta X_{it} + \ldots \ \mu_{it}$ ……... (3)

Where:

C_{it} = Conflict is coded one (1) when a country has been affected by conflict and zero (0) otherwise.

X_{it} = a vector of independent variables.

β= the matrix of coefficients (parameters)

$\mu_{it} = \eta_i + \lambda_t + \varepsilon_{it}$

ε_{it} = the stochastic error term.

η_i = country specific effect

λ_t= time dummy

As mentioned above, the model for conflict is analyzed by the logistic regression since the dependent variable is a dummy. The logistic regression model is a non-linear transformation of the linear regression model as specified in equation (3). Wright (1995) argues that the linear model determines the value of an observed variable, say C_{it}^*, which is used in determining the outcome observed for the zero-one dummy, C_{it}. Therefore

$C_{it}^* = X_{it}\beta + \mu_{it}$; I =1,…….. n

And

$C_{it} = 1$ if $C_{it}^* > 0$, $C_{it} = 0$ if $C_{it}^* \leq 0$ ($C_{it} = 0$ otherwise)……(4.4)

From equation (4.4), the probability that $C_{it} = 1$ is equal to the probability that $C_{it}^* > 0$ and also equal to the probability that $X_{it}\beta + \mu_{it}$ is greater than zero. Hence

$P_{it} = \Pr(C_{it} = 1 = \Pr(C_{it}^* > 0)$

$P_{it} = \Pr(x_{it}\beta + \mu_{it}) > 0$

$P_{it} = \Pr\ \mu_{it} > -x_{it}\beta$

$P_{it} = 1 - \mathrm{F}(-x_i\beta)$ …….. (4.5)

Where F is the cumulative distribution function (cdf) for μ_{it}.

If the cumulative distribution function is symmetric about zero then $1 - \mathrm{F}\ -x_{it}\beta = \mathrm{F}\ x_{it}\beta$. Hence from equation 4.5, $P_{it} = \Pr(C_{it} = 1) = \mathrm{F}\ x_{it}\beta$. From the logit model, F is the standard function. It follows that:

$$\mathrm{F}\ x_i\beta = \frac{1}{1+e^{-(X_{it}\beta+\mu_{it})}} \quad \text{…… (4.5b)}$$

Therefore, from equation (4.5)

$$P_{it} = \Pr\ C_{it} = 1 = \mathrm{F}\ x_{it}\beta = \frac{1}{1+e^{-(X_{it}\beta+\mu_{it})}} \quad \text{……}$$

(4.6)

Now if P_{it} is the probability of Conflict presence, then the probability of no conflict is also represented as $(1-P_{it})$. Hence, we can write $1-P_{it} = \frac{1}{1+e^{C_{it}}}$ where $C_{it} = x_{it}\beta$. And it follows that

$$\frac{P_{it}}{1-P_{it}} = \frac{1+e^{C_{it}}}{1+e^{-C_{it}}} = e^{C_{it}} \quad \ldots\ldots (4.7)$$

Now $\frac{P_{it}}{1-P_{it}}$ represent the odd ratio of the probability of Conflict presence, to the probability of no conflict. The logarithm of equation 4.7 is given as:

$$L_{it} = ln\ \frac{P_{it}}{1-P_{it}} = C_{it} = x_{it}\beta \quad \ldots\ldots (4.8)$$

The log of the odd ratio is called the logit and therefore the name logit model. Now equation 4.8 requires that we apply the maximum likelihood estimation to the logistic regression since the use of ordinary least square estimation for a binary choice model is inappropriate (Maddala, 1983). Maddala (2001) further proposed the likelihood function L and that can be used to estimate the unknown parameter (β_i). The likelihood functions as stated below:

$$L_{it} = \prod^{n}{}_{C_{it}=1} P_{it} \prod^{n}{}_{C_{it}=0} (1 - P_{it}) \quad \ldots\ldots (4.9)$$

The empirical model for equation 4.8 is expressed as:

$$f\ x\ = C_{it} = \beta_1 lnFDI_{it-n} + \beta_2 \mathrm{TNR}_{it} + \beta_3 \mathrm{POP}_{it} + \beta_4 GDPgrwth_{it-1} + \beta_5 ELF_i + \beta_6 \mathrm{UEM}_{it} + \beta_7 \mathrm{POL}_{it} + \beta_8 PSE_{it} + u_{it}$$

The predicted probability from the logistic regression model is given as:

$$\mathrm{P}(C_{it}=1/\mathrm{x}) = f(x) = \hat{\rho}_{it} = \frac{e^{f(x)}}{(1+e^{f(x)})} \quad \ldots\ldots (8)$$

$$\hat{\rho}_{it} = \frac{e^{\beta_1 lnFDI_{it-n} + \beta_2 \mathrm{TNR}_{it} + \beta_3 \mathrm{POP}_{it} + \beta_4 GDPgrwth_{it-1} + \beta_5 ELF_i + \beta_6 \mathrm{UEM}_{it} + \beta_7 \mathrm{DEM}_{it} + \beta_8 PSE_{it} + u_{it}}}{(1+e^{\beta_1 lnFDI_{it-n} + \beta_2 \mathrm{TNR}_{it} + \beta_3 \mathrm{POP}_{it} + \beta_4 GDPgrwth_{it-1} + \beta_5 ELF_i + \beta_6 \mathrm{UEM}_{it} + \beta_7 \mathrm{DEM}_{it} + \beta_8 PSE_{it} + u_{it}})} \quad \ldots\ldots (9)$$

Where:

C - Dummy variable indicating whether a war will break out or not, so the C_{it} is the log odds of war.

$\ln FDI_{it}$ – Natural logarithm of FDI of country i at time t

TNR_{it} - Total Natural Resource Rent of country i at time t (% of GDP)

PSE_{it} - School enrollment, primary, male of country i at time t (% gross)

POP_{it} – Total Population of country i at time t (% of total)

$GDPgrwth_{it}$ – GDP growth of a country i at time t (current US$)

ELF_i – Ethnic Fractionalization of country i

UEM_{it} – Male Unemployment of country i at time t (% Total labor force)

DEM_{it} – Democracy of country i at time t

C_{it} - Estimated coefficients obtained of country i at time t

ρ_{it} - Expected probability of a war breaking out of country i at time t

$\mu_{it} = \eta_i + \lambda_t + \epsilon_{it}$

η_i -Country specific effect

λ_t-Time dummy

ϵ_{it} = Idiosyncratic error

$\beta = 1 \ldots n$, are the coefficients of the various measurement.

i, Countries

n= FDI lag 1, 2, 3 …

t, 1990……2015

The expected probability $\hat{\rho}_{it}$ *of* conflict presence can be calculated by using the estimated coefficients obtained from equation (6). The log transformation is also done on some variables and

this is for two main purposes; since the various variables being used are in different units of measurement that some of the estimates for the variables are larger whiles others are in decimals. We take natural log of some variables to make data handling and analysis simpler. In addition, the logarithmic transformations mean the coefficients are elasticities and they provide a basis for comparison with other studies on the subject.

3.5 Data and Sample period

The empirical analysis used a panel data gathered over a period of (1990-2015) for all SSA nations who have experienced conflict and those who have not. The study uses this time period (1990 to 2015) because, the researcher is interested in the periods after the cold war and to be able to addresses current trends of conflicts and at the same time due to the conflict data available. Data on conflict is extracted from Collier, Hoeffler, and Rohner (2008), UN Mission (UNMEE) and CIA World Factbook, Uppsala Conflict Data Program (UCP) and Center for Systemic Peace (CSP). We source our FDI net inflow data from WDI (2016). In addition, Data on the control variables such as GDP growth, School Enrollment (Primary, male), Total Natural Resource Rent (% of GDP), and population of age's 15-64, Unemployment, is sourced from the WDI database, (2016). Data on religious and ethnic fractionalization was extracted from Buhaug, Cederman and Gleditsch (2016) replication data. Data on democracy is obtained from polity IV data set.

3.6 The Measurement of Variables

The measurement variables include conflict, FDI, and control variables.

3.6.1 Conflict

In explaining the concept of conflict, we follow the definition of civil war (Collier & Hoeffler, 2004; Fearon & Latin, 2003; Small & Singer, 1982; 1994) which is generally used and acceptable in the literature. These scholars argue that the nature of conflict that has to be considered must

meet the following four criteria: (1) 'conflict involving fighting within a state and a non-state group who seeks to take control of a region, seeks to topple the government, or use violence in order to achieve some goal; (2) the conflict should kill at least 1000 people overall, from both side; (3) the conflict killed 100 people per year on average, from either side; (4) the conflict killed at least 100 people on each side of the fight'. Thus, the definition of conflict further encompasses civil wars, political instability. The dependent variable is a dummy variable, which indicates the presence of conflict over a period of time. So the C_{it} is the log odds of war. The dependent variable, conflict, is measured as one (1) when a country has been affected by conflict and zero (0), otherwise. Data on conflict is extracted from Collier, Hoeffler, and Rohner (2008), UN Mission (UNMEE), CIA World Factbook and Uppsala Conflict Data Program (UCP). According to the literature, conflict can be affected by FDI and other control variables.

3.6.2 Foreign Direct Investment

The study measures net FDI inflow (inflow minus outflow) as the natural logarithm of millions of current US dollars each year (World Bank 2009). From the literature, the researcher expects a negative relationship between conflict and FDI, thus, the inflow FDI significantly reduces conflict (increased FDI flow is accompanied by low conflict rate). Furthermore, the inflow of FDI into host country comes with advantages such as transfer technology, spillovers, creation of employment opportunities, and improvement in management techniques available to local firms in order to increase employment availability and higher levels of productivity. The data on FDI is sourced from WDI (2016).

3.6.3 Opportunity and Grievance variables (Control Variables)

The following opportunity and grievance variables such as primary school enrolment, population, natural resource, GDP growth, democracy, unemployment, primary school enrolment and ethnic

fractionalization (Collier & Hoeffler 2001; 2004) are employed.

3.6.3.1 Total Natural Resource

Natural resource can be described as the summation of coal rents (hard and soft), forest rents, oil rents, mineral rents and natural gas rents (WDI, 2016). The literature on natural resource and conflict proposes that natural resources can have positive, negative or no causal relationship with conflict. Studies such as Collier and Hoeffler, 1998, De Soysa, 2000, Brunnschweiler, 2007 argues that existence of natural resource increases the likelihood of civil war occurrence, since it can serve as a source of rebel financing. Others argue that the relationship natural resources and conflict is neutral (Collier & Hoeffler, 2004). Countries that depend on natural resource as a major resource for development and are characterized by slower economic growth, barrier to economic diversification, high incidence of corruption, exceptionally poor governance and high incidences of internal conflict. Total natural resources is measured as the summation coal rents (hard and soft), forest rents, oil rents, mineral rents and natural gas rents as a percentage of GDP (WDI, 2016).

3.6.3.2 Education

Education is measured as the sum of male enrollment in primary education irrespective of the person's age, expressed as the percentage of the total number of pupils within the same age group and level of education. Primary school education enables children to be able to read, write, and perform basic mathematical task. It also introduces children to basic history, social and natural science, art, geography, and music. The score from primary education measure can exceed 100 percent due to the inclusion of grade repetition, under and over aged pupils, due to early or late entrance. . From literature, education is negatively related to conflict. We source the school enrollment data from (WDI, 2016).

3.6.3.3 Population

Population used in the present study's regression can be defined as; the total number of all citizens within a domestic country, irrespective of once legal status whiles excluding refuges who are not permanent resident of a particular country. We measure population as the natural logarithm of the total population of all citizens within a particular country, irrespective of their legal status (WDI, 2016). From literature, population is positively related to conflict.

3.6.3.4 Ethnic Fractionalization

Ethnic fractionalization measures the likelihood that two randomly drawn individuals within a particular domestic country speak different languages. It is also measured from the ethno-linguistics fractionalization index and ranges from a score of zero (0) to one (1). A score of signifies that the society is completely homogenous whereas, completely heterogeneous when the score is one. From the literature, ethnic fractionalization is positively linked to conflict presence (the higher the value of ethnic fractionalization, the more likely that conflict will occur. Ethnic fractionalization measures national ethnic homogeneity.

3.6.3.7 Democracy

Democracy is a composite measure of societies' political systems based on three main aspects; (1) scope and regulation of political participation (the availability of institutions, policies that can enable citizens to be able to express their preferences on alternative laws, policies and leaders). (2) Electing of executives through open and regulated processes; (3) the control of the executive by other institutions in the political system. The democracy variable is an additive eleven-point scale from zero to ten (0 – 10). A country is described as fully democratic, if it meets all the three dimensions of political system. From the literature democracy is negatively related to conflict.

3.6.3.8 Unemployment

Unemployment is a measure of total number of males who are currently without work but are available and seeking for work as a proportion of the labor force. From literature, unemployment is directly linked to conflict (Unemployment increases the likelihood of conflict).

Table 3:2 Summary of Description and Expected Results of Variables

Variable	Description	Symbol	Prior expectation On Conflict
Foreign Direct Investment	Log of Foreign direct investment net inflows	Ln FDI	-
Total Natural Resource Rent (% of GDP)	Total Natural Resource Rent (% of GDP)	TNR	+
Population	Total Population Between the Ages 15 to 64	POP	+
GDP per capita Growth	The ratio of total goods and services to total population in an economy	GDP growth	-
Education	School Enrolment, Primary, male (% of gross)	PSE	-
Ethnic Fractionalization	Ethnic fractionalization measured on a scale of 0-1	ELF	+
Democracy	Democracy is measured on a scale of 0-10	DEM	-
Unemployment	The total number of males who are without work but are available for and seeking for work as a share of the labor force	UEM	+

Source: Author's Construct

3.7 Interpreting Logit Coefficients

In the logistic regression model, the estimated coefficients from logistic models are not very useful for the purposes of interpretation. The current study employed the marginal effect for the purpose of interpretation between the dependent and independent variables. Marginal effect

(dy/dx) measures the changes in the dependent variable resulting from an infinitesimal change of the continuous independent variable or a discrete change in a dummy independent variable. That is the marginal effect tells us by how much the dependent variable will change due to a unit change in the independent variable. The marginal or partial effect measures the effect on the conditional mean of the dependent variable (say conflict) due to a unit change in one of the independent variables, all other things being equal. Thus, it tells us the exact magnitude of the effects of the independent variables that affect the conflict. The marginal effect depends on the magnitude of the independent variable, so it is usually useful when evaluating the marginal effects at the means of the independent variables. The marginal coefficient can take the sign negative, which does not imply that the probability is negative, but the direction of the effect of the positive probability on the baseline probability of the dependent variable. The use of marginal effect for interpreting results is more intuitive than the odds ratio. So the current study employed the marginal effect analysis.

3.8 Fitting the Single Logistic Regression Model

Since it is important for a logistic model to fit sufficiently before the model can be used to make statistical inferences, this sub-section introduces us to the various post estimation tests that were carried out. The various tests are the maximum likelihood parameter estimates or the likelihood ratio test, link-test, diagnostic and goodness of fit tests.

3.9 Chapter Summary

This chapter has discussed the theoretical basis of the study and subsequently adopted and modified the model, which is estimated in Chapter Five. The methodology used in estimating the results and the diagnostic test used are all clearly explained. An econometric technique (binary logistic model) was adopted and used to determine the impact of FDI on conflict. All the variables

used in the study are well explained as well as their prior expectations. The sample size and the sample period as well as model justification were also outlined in this chapter.

CHAPTER FOUR

DISCUSSION OF RESULTS

4.1 Introduction

This chapter aims at using an econometric technique (binary logistic model) to empirically establish the impact of FDI on conflict, as well as the nature of FDI and conflict in SSA. It outlines the results obtained from analyzing the data used to achieve the objectives of this study. This chapter begins with a presentation and discussion of the results from the descriptive statistics of variables used in the study and subsequently addresses the objectives of the study. The empirical model, correlation matrices and graphs are also presented to describe the relationship and trend of variables used in this study. The chapter finally closes with a summary of the results presented.

4.2 Descriptive Analysis

This section presents the summary of descriptive statistics of the variables used in the regression model. These statistics are generated purposely to help give overall description of the data used in the model and to assist the researcher screen the data for any suspicious figure. To deal with extreme values, we took the natural log (log-transformed) for variables such as FDI and population. Some key descriptive measures to be considered are the mean, standard deviation, the minimum and the maximum values of the variables over the sample period. We also examined the natural resource endowment, nature of growth experienced by conflict and non-conflict countries in SSA.

Table 4.1: Conflict and Non-Conflict in SSA

Conflict	Frequency	Percent	Cumulative
0	650	58.14	58.14
1	468	41.86	100
Total	1118	100	

Source: Author's computation using data from WDI (2016)

From table 4.1, the value of 0 represents no conflict while the value of 1 represents conflict presence. The table further shows that about 41.86% of countries in SSA have experienced conflict (civil war) before while the remaining 58.14% have not experienced conflict before across the sample period.

Table 4.2 Descriptive Statistics of the Variables

Variables	Obs.	Mean	Std. Dev.	Min	Max
Conflict	1118	0.4186047	0.4935511	0	1
FDI	1106	440000000	1170000000	-7120000000	9890000000
GDP Growth	1111	0.043613	0.08854	-0.5103086	1.49973
Population	1114	16600000	24300000	341883	181000000
Ethnic Fractionalization	1118	0.6592411	0.2189593	0.0355107	0.9250348
Total Natural Resource	1107	0.1418467	0.1408882	0	0.8916611
Unemployment	1075	0.086552	0.0665141	0.00336	0.32403
Democracy	1109	3.269612	3.351058	0	10
Education	919	0.9023087	0.2706151	0.2029839	0.9250348
Log Variables					
Ln FDI	1024	18.29116	2.318947	4.60517	23.01428
Ln Population	1114	15.84159	1.327949	12.74222	19.01501

Source: Author's computation using data from WDI (2016)

From Table 4.2 it is evident that FDI net inflow in SSA on average is $440,000,000, (but in log terms, the average (standard deviation) FDI net inflow is 18.29116 units (2.318947)) with a standard deviation 1170000000 which shows that, FDI net inflow to SSA have been on the increase since the end of the cold war till date. However, the variable GDP growth had the least mean of 0.043613, which suggests that on average economic growth has been stable among SSA countries over the period.

Again, the Table 4.2 confirms that, on average, 41.9% of the countries investigated in this dataset experienced conflicts in SSA from 1990 to 2015. It also shows that the average GDP growth is 0.043613 units with a minimum growth rate of -0.5103086 units and a maximum growth rate of 1.49973 units. Total natural resource endowment stood at 14.18467% of the

gross domestic product with the minimum proportion of total natural resource to GDP being zero and a maximum being 0.8916611 among SSA countries. The proportion of total male unemployment to the total labor force on average was 8.6552% with a minimum proportion of 0.00336 units and a maximum proportion of male to labor force unemployment of 0.32403 units across SSA countries between the periods 1990 and 2015.

Furthermore, the average ethnic fractionalization index among countries in SSA stood at 0.6592411 units with minimum and maximum values of 0.0355107 and 0.9250348 units respectively which indicate that SSA countries are more of heterogonous (mixed) in terms of ethnicity; thus, SSA countries are characterized by mixed or several forms of ethnic groups. The average (standard deviation) democracy index stood at 3.269612 (3.351058) with 0 and 10 as the minimum and maximum values, respectively. Thus, on average most countries in SSA are fairly democratic.

Lastly, the average primary school enrollment (standard deviation) from Table 4.2, stood at 0.9023087 units (0.2706151) with 0.2029839 units and 0.9250348 units as minimum and maximum values, respectively. This implies that most SSA countries have access to basic education on average.

4.2.1 Comparison of Variables for Conflict and Non-Conflict Countries in SSA.

In this sub section, we present average FDI, GDP growth, total natural resource, population, unemployment and education in conflict and non-conflict Countries in SSA.

Table 4.3 Means of Variables

Variable	Non-Conflict Countries (A)	Conflict Countries (B)	Difference in Means (B – A)
FDI	6400917286	11227082916	482616562975.66%
GDP growth	97.56%	70.00%	-27.56%
Total Natural Resource	253.20%	353.29%	100.09%
Population	255406264	471893794.4	216487530.5
Unemployment	260.0708799	130.7095601	-12936.13%
Education	2158.074281	1182.944102	-975.1301787

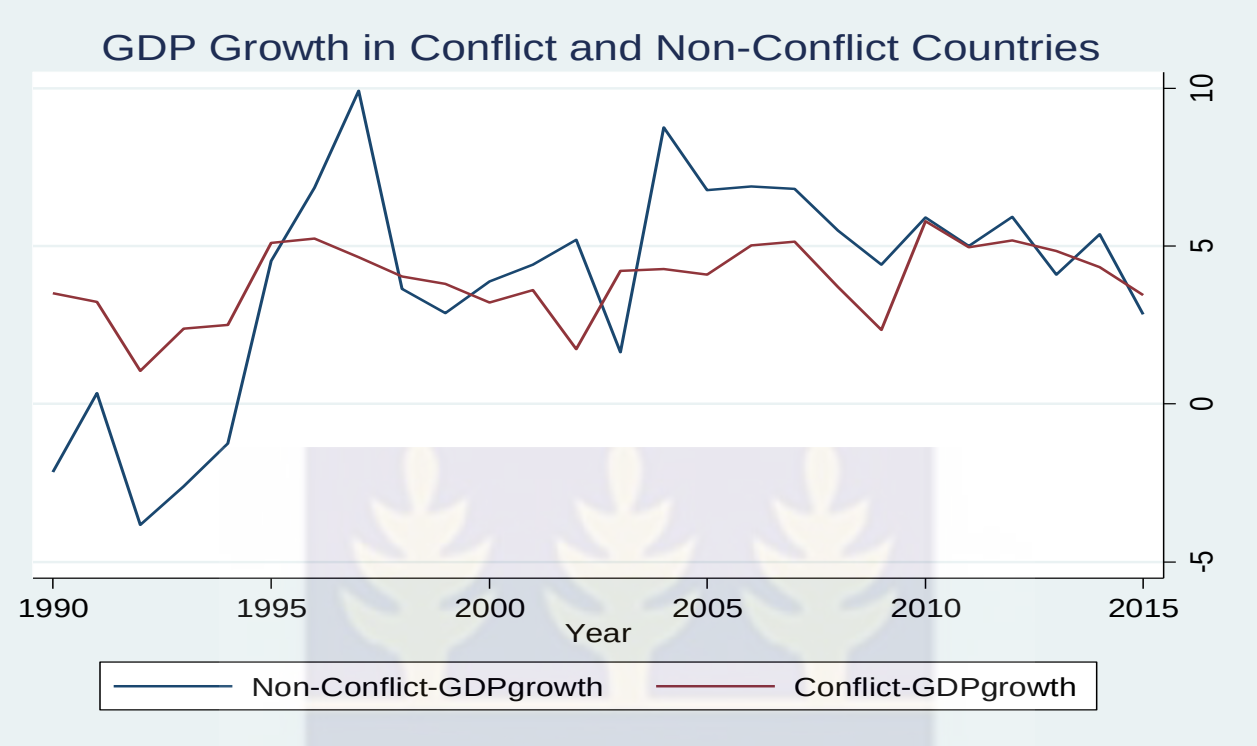
Source: Author's computation using data from WDI (2016)

4.2.1 Comparison of GDP Growth for Conflict and Non-Conflict Countries in SSA

Figure 4.1 shows the trend in GDP growth for both conflict and non-conflict countries from 1990 to 2015. We observe that non-conflict countries seem to have experienced relatively stable and higher GDP growth rate historically, than conflict countries. From Table 4.3 it can be observed that, the mean growth rate of GDP in conflict countries was 70%, compared to 97.56% for non-conflict countries. Figure 4.1 further shows that, between the periods of 1990 and 1996, the growth rate for non-conflict countries exceeded the growth rate in conflict-affected countries.

Conversely, the periods from 2000 to 2010 saw a growth rate in conflict countries relatively exceeding the growth rate in the non-conflict countries. The higher growth rate experienced by the conflict countries towards the end of the sample period is attributable to the fact that these countries were recovering from their wars and therefore were able to experience comparatively higher growth. Indeed, the growth in post conflict countries generally assumed an upward trend, whereas there was no discernable trend in the growth rate of the non-conflict countries. Between 2011 and 2015, saw GDP growth rate dropping relatively at a low pace for both conflict and non-conflict countries.

Figure 4.1 GDP Growth in Conflict and Non-Conflict among SSA Countries

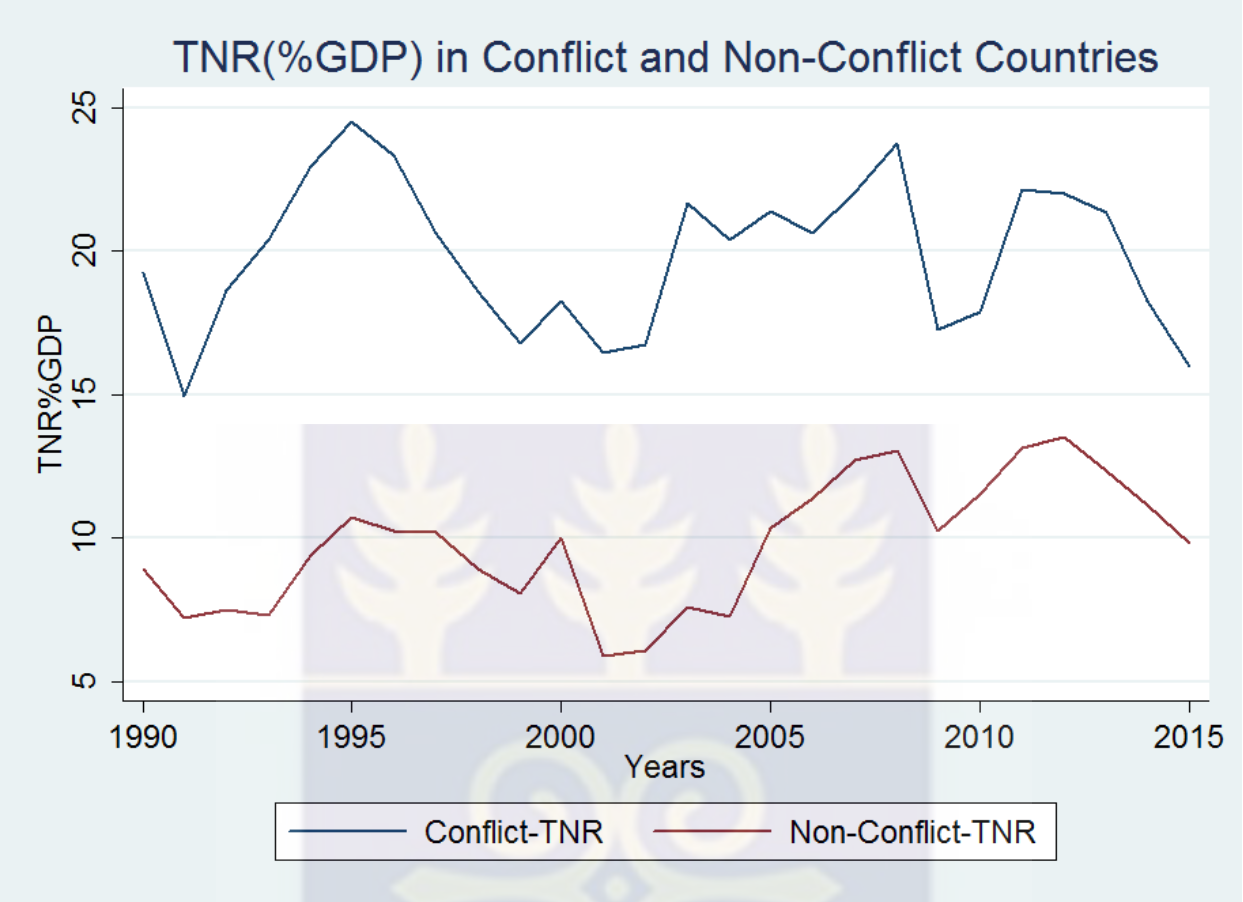


Source: Generated by Author based on Data from WDI

4.2.3 Comparison of TNR in Conflict and Non-Conflict among SSA Countries

Figure 4.2 shows that countries that have been afflicted by conflict in the past have a higher natural resource endowment compared to non-conflict countries. The mean level of total natural resource rents for the non-conflict countries were 253.20 percent, compared to 353.29 percent in the conflict-afflicted countries (see Table 4.3). This signifies that the level of natural resource endowment in the conflict countries was almost double that in the non-conflict countries. Thus, countries afflicted by conflict are mostly the countries that are endowed with natural resources. We can further observe that both conflict and non-conflict countries generally saw an increase in the level of natural resource rents received over the sample period.

Figure 4.2 Comparison of TNR in Conflict and Non-Conflict among SSA Countries



Source: Generated by Author based on Data from WDI.

4.3 Correlation Matrix

Table 4.4 presents the correlation matrix for all the independent variables selected and used in the model. The correlation coefficient provides an index for both the magnitude and the direction of relationship between set of variables without implying causality (Pindyck et al., 1991). The Correlation coefficient also helps to determine the extent to which two variables are multicollinear or not. So we conducted the multicollinearity test in order to ensure that no two variables are linearly dependent in this study. We present coefficients that are significant at 10 percent with a star. From Table 5.4, it can be observed that variables such FDI, democracy and education are significantly and negatively correlated with conflict while population, ethnic fractionalization and

total natural resources are positively and significantly correlated to conflict. From Table 4.4, the coefficient test reveals that there is no problem of multicollinearity. This is because the correlation coefficient between variables is less than the standardized value of 0.5 between any two variables. Therefore, there is no multicollinearity (Jensen, 2003). This therefore indicates that the variables are independent of each other and all can be included in the model.

Table 4.4 Correlation Matrix

Variables	Conflict	Ln FDI	GDP Growth	Population	Ethnic Fractionalization	Total Natural Resource	Unemployment	Democracy	Education
Conflict	1.000								
Ln FDI	-0.188*	1.000							
GDP Growth	-0.039	0.041	1.000						
Population	0.324*	0.516*	0.033	1.000					
Ethnic Fractionalization	0.158*	0.190*	0.033	0.270*	1.000				
Total Natural Resource	0.342*	0.075*	0.090*	0.109*	0.200*	1.000			
Unemployment	-0.178*	0.106*	-0.002	-0.169*	-0.058*	-0.199*	1.000		
Democracy	-0.241*	0.123	0.016	-0.021	-0.098*	-0.308*	0.119*	1.000	
Education	-0.137*	0.092*	0.127*	-0.031	-0.215*	0.033	0.184*	0.259*	1.000

Source: Author's computation using data from WDI (2016

4.4 Nature of FDI and conflict in SSA

The main purpose of this sub-section is to address objective one (to examine the nature of FDI and conflict in SSA. We first delve into the trend of conflict in SSA over the study period, followed by the trend of FDI in SSA as reported annually by various organizations such the UNCTAD, FPR, WDI and GPI. We subsequently, analyze the FDI received by both conflict and non-conflict countries over the study period.

4.4.1 Conflict Trend in SSA

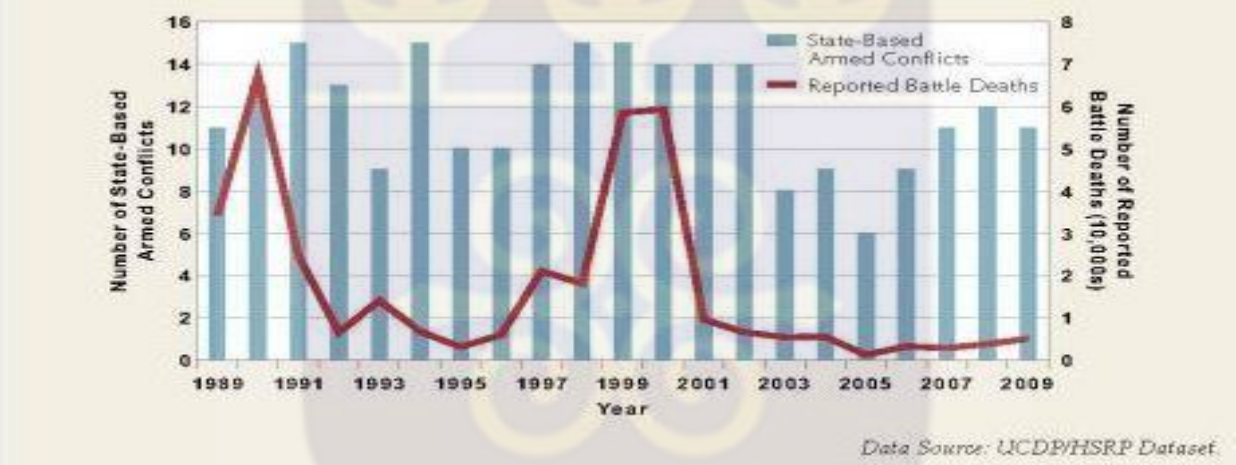
Periods after the Cold War have experienced significant global decline in the number of armed conflicts and fatality and this can be attributed to a dramatic reduction in major powers engaging in proxy conflicts (SIPRI, 2013). In 1946, the Uppsala Conflict Data Program (UCDP), for instance, identified 259 distinct armed conflicts across the world. Such armed conflicts consisted of all organized military conflicts over government or territory involving one or more state government(s) and causing at least 25 battle-related fatalities in a year. The UCDP further identified two forms of conflict, namely: colonial and interstate conflicts (which accounts for half of all armed conflict during the early parts of 1940s) and the most predominant form of conflict in modern time, intra-state conflict (civil war), although quite often involving external state players.

The Stockholm International Peace Research Institute (SIPRI) in 2002, observed that, "Africa is the most conflict ridden region of the world, and the only region in which the number of armed conflicts is on the increase" (SIPRI, 2002).Research reveals that Africa as a developing continent has had its share of the world's civil conflict, just like other developing countries but with some form of minor exceptions. Thus, its conflict experience is consistent with the global pattern.

However, the structure of risk differs considerably from other regions with the main causes being the nature of Africa's economic characteristics (poor economic performance, poverty, etc.), which

have made Africa more vulnerable to conflict. There have been contrasting trends (rising and declining) of civil conflict in Africa (Collier & Hoeffler, 2005). The Agence France Presse (AFP) foundation reports that in Nigeria an estimated 13,000 lives have been lost to the Boko Haram insurgency between the period of July 2009 and the first half of 2015 with about 650 deaths occurring in northeastern and north central states of Nigeria (AFP, 2014). The main causes of these deaths are associated to Boko Haram rebels, the military and the inception of a new government.

Figure 4.3: Number of State-based Armed Conflict and Battle Death (10,000s) in SSA



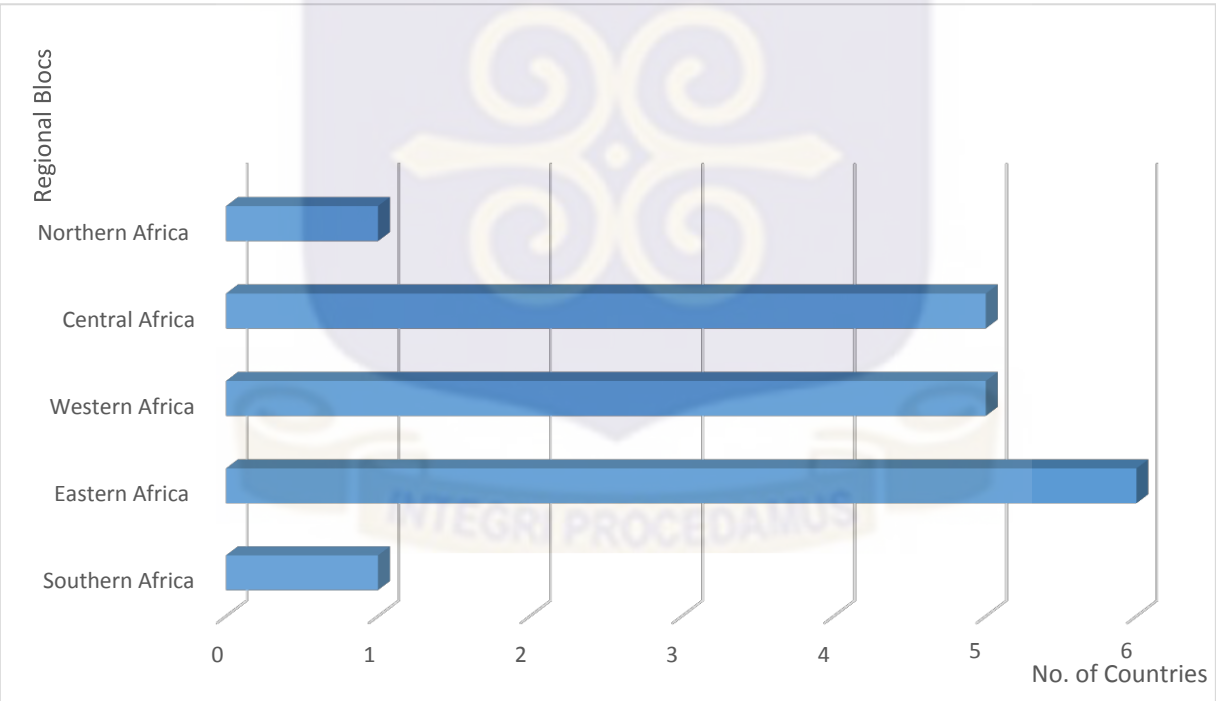
The Figure 4.3 above displays a pictorial view of the general trend of a number of state-based armed conflict and battle death (10,000s) in SSA during and after the cold war. We observe that each of the trend graphs is marked with a vertical line at 1989 as a point of reference demarcating the end of the Cold War. The upward trend continued through the early years of the 1990's and over forty percent of the region's countries were experiencing wars at the peak in 1993. And this occurrence was largely attributed to the prolonged duration of wars during the Cold War, and very few wars ended by negotiated settlement during this period. Periods after 1993 saw conflict trends

2005 also saw a further downward trend in the occurrence of conflict, overturning such that the general magnitude of war decreased to about half during the peak period and this occurred in the year 2004. The years afterwards saw a relatively low rate of increase in conflict till date.

4.4.1.1 Number of Conflict Countries per Region Blocs in SSA

Figure 4.4 shows the number of conflict countries per region in SSA. It can be observed that Eastern Africa recorded six conflict countries in SSA across the study period, which represents the highest among the regions. Southern and Northern Africa both recorded one conflict country each, which is the least among all the regions across the study period. Central Africa and Western Africa also recorded the same number of conflict countries (five countries each) across the study period.

Figure 4.4 Number of Conflict Countries per Region Blocs in SSA



Source: Generated by Author based on Data from WDI

4.4.2 Trend of FDI in SSA

FDI, as described as a form of exporting capital across borders, has increased globally over the last three decades (UNCTAD, 2016). Most scholars argue that FDI continues to be a more stable and prominent source of capital inflow for most developing nations in recent years. OECD (2008) reports that, FDI continues to be higher than official development assistance (ODA) as the main source of external finance for most developing economies. UNCTAD (2016) also reports that the flow of FDI to SSA and the world at large increased by 40%, to $1.8 trillion and can be regarded as the highest ever since the global economic and financial crisis in 2008.

It is evident that, FDI inflows have contributed to the growth of most developing nations, with Africa not being an exception. Studies pointing out some positive relationship between FDI and growth in Africa include Falki (2009), Loungani and Razin (2001), and Moss, Ramachandran and Shah (2005). The OECD (2002) reports that FDI increases the efficiency of resources and raises factor productivity especially in host countries. So it sees the influence of FDI on growth as positive. In contrast a study by Anyadike (2012) argues that the slow economic growth and development in SSA has been due to the lack of enough inflow of foreign investment. The early years after the cold war saw SSA experiencing relatively low levels of FDI inflow.

However, the years after 1995 have seen general rising levels of FDI inflow to Africa. In 2008, FDI inflow to Africa reached the highest ever in the history of the continent and this was due to the resource boom during that period. But the continent has since experienced a continuous decline. Specifically, the inflow of FDI fell by 9% in 2009. In 2010, the total FDI inflow to Africa rose and stood at $55 billion (UNCTAD, 2011). Among the major beneficiaries are Nigeria and Ghana. However, while Ghana saw a relative increase, Nigeria experienced a significant decline much larger than Ghana's increase. Hence, the sub-region is predicted to continue to see a decline

in total inflows.

UNCTAD (2013) reports that FDI inflow to SSA stood at $50 billion in 2012 with the major beneficiaries of the increase in FDI inflows being East Africa, Central Africa and North Africa. However, there were declines in FDI inflows to West Africa and the Southern Africa. In 2013, SSA once again saw an increase in its inflow of FDI by 4% (from $50 to $57 billion) due to local and foreign market-seeking and infrastructural investments, with Southern Africa and Eastern Africa being the major beneficiaries while the Northern and Western Africa seeing a reduction of inflow to their sub-region.

For the year 2014, FDI inflows to Africa fell slightly to $54 billion (UNCTAD, 2015), with the services sector of the African economy dominating FDI attraction. This represents about 4% of global FDI in 2014 and 8% of developing country FDI, which is quite low. Among the highest 5 recipients of FDI in Africa in 2014 were Mozambique ($9bn), Angola ($16bn), Egypt ($18bn), Congo ($5bn) and Nigeria ($11bn). Nigeria and Ghana were the only West African countries, which received more than $3 billion. Four other countries received between $1 billion and $1.9 billion, while more than half of African countries received less than $1 billion in the year 2014. South Africa, Angola, Togo, Libya and Nigeria were the top 5 countries as far as FDI outflow is concerned. Total outflows for Africa were just about 1% and remained at that rate for more than 3 years.

Furthermore, UNCTAD (2016) reports that FDI inflow to Africa continued to remain at $54 billion in 2015. The improvement in FDI inflow to North Africa was more than a decreasing flow into SSA, especially to Central and West Africa. Observably, low commodity prices depressed FDI inflows in natural-resource-based economies. FDI inflows to Africa are expected to increase moderately in 2016 due to liberalization measures and planned privatizations of state-owned

enterprises. But this increase is smaller as compared to other developing economies or nations. And this indicates that the region has not been successful at attracting FDI as other parts of the developing world.

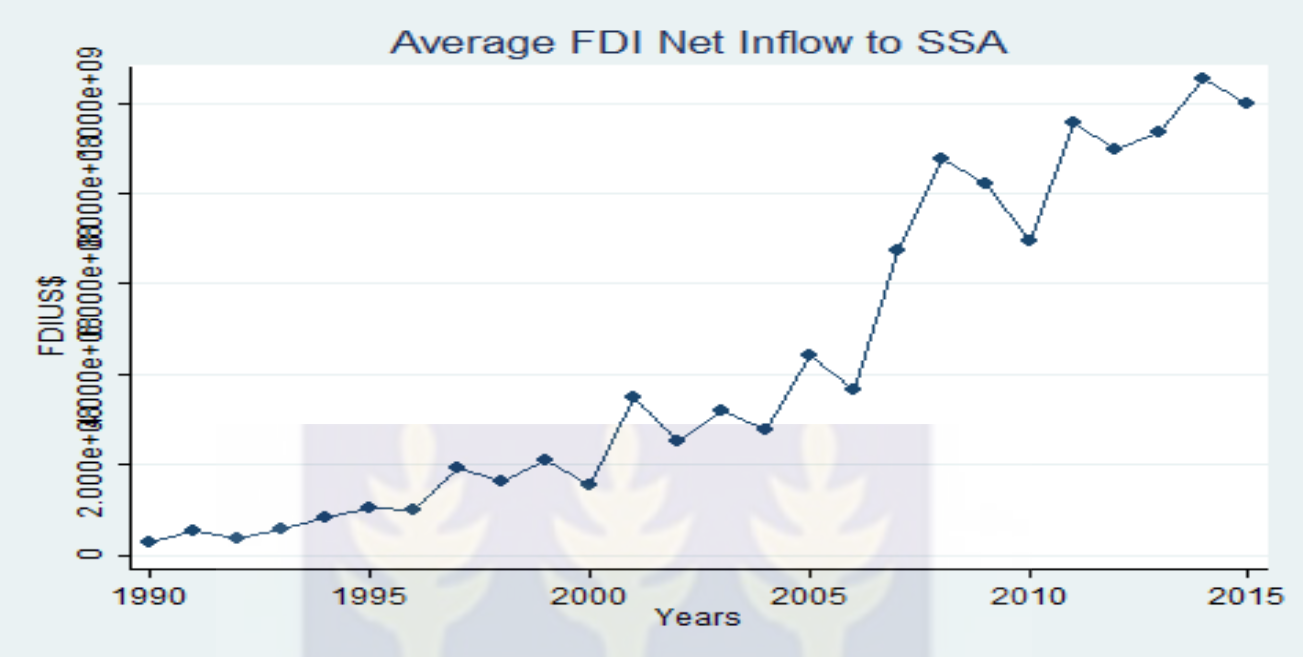
4.4.3 Analysis of FDI received by Conflict and Non-Conflict countries in SSA

In this sub section, the study examines the nature of FDI received by conflict and non-conflict countries in SSA, by using FDI net inflow data from WDI. The results are presented by the use of tables and graphical representation, for countries that have been plagued by conflict and those that have not in SSA, as well as ranking the amount of FDI received by the individual countries for both conflict and non-conflict countries. Finally, the study compared the average FDI net inflows received by both conflict and non-conflict countries.

4.4.3.1 Trend Analysis of Average FDI Net Inflow to SSA Countries

Figure 4.5 presents the trend analysis of FDI net inflow to SSA countries. It can be observed that the periods from 1990 to 2015 was a rather turbulent period, which saw a lot of ups and downs in FDI net inflow on average. Thus, FDI net inflow on average increased erratically right from the early years after the cold war till it peaked at a point and fell sharply afterwards. The period from 1997 to 2007 also was a continuous fluctuation in average FDI net inflow. Afterwards, periods from 2008 saw FDI net inflow on average increasing sharply, followed by a sharp fall shortly, and increase afterwards till it peaked in 2014, later followed by a continuous drop till 2015. In sum, it can be observed generally that the average FDI net inflow to SSA has relatively been on the increase right from the end of the cold war (the beginning of the study period).

Figure 4.5: Trend analysis for FDI net inflow to SSA from 1990 to 2015



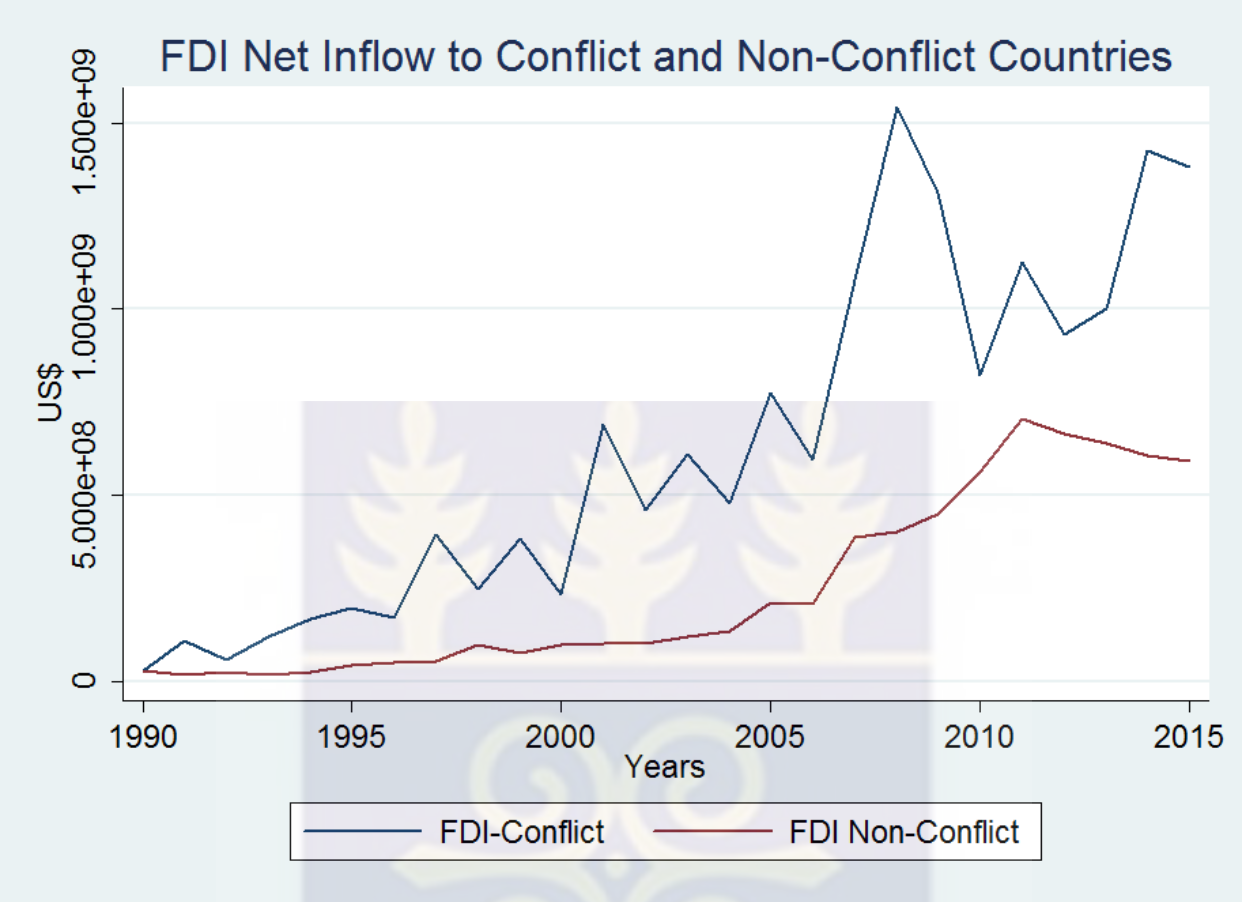
Source: Generated by Author based on Data from WDI

4.4.3.2 Average FDI Net Inflow to Conflict and Non-Conflict Countries

From Figure 4.6, it can be observed that, average FDI net inflow to conflict countries exceeded those to non-conflict countries. FDI net inflow on average to non-conflict countries has been on an upward trend and relatively stable until it peaked in 2011and afterwards dropped relatively at a slow pace. Average FDI net inflow to conflict countries has generally turbulent from right from the start of 1990. Thus, the period from 1990 to 2006 saw continuous fluctuations in average FDI net inflow to conflict countries, followed by a sharp increase till it peaked at 2008 and subsequently dropped dramatically to 2010, and a further recovery (relative increase) between 2011 and 2015.

On the other hand, non-conflict countries recorded a gradual rise in average FDI net inflow right from 1990 till it peaked in 2012, and a subsequent drop (slight fall) till 2015. It can be observed that non-conflict countries received more FDI than conflict countries at the beginning of the study period.

Figure 4.6 Comparison of FDI to Non-Conflict and Conflict Countries



Source: Generated by Author based on Data from WDI

4.4.3.3 Average FDI Net Inflow Received by Conflict Countries (1990-2015)

From Table 4.5, it can be observed there are 18 countries are considered as conflict countries. And among the countries plagued by conflict, Nigeria recorded an average FDI net inflow of $3,375,465,532 and ranked first since it received the highest FDI net inflow on average whiles Guinea-Bissau received an average FDI net inflow of $9,135,889.03 which is recorded as the least and ranked last across the study period. South Africa is ranked second and Congo, Rep. in third position with an average FDI net inflow of $3,036,369,985 and $956,309,639, respectively. Central Africa Republic, Burundi and Guinea-Bissau are the last three countries that received the

least FDI among the conflict countries. They recorded an average FDI net inflow of $18,711,121.8, $11,552,524 and $9,135,889.03 associated with 16th, 17th and the 18th positions for Central Africa Republic, Burundi and Guinea-Bissau, respectively.

Table 4.5 Ranked Average FDI Net Inflow Received by Conflict Countries (1990-2015)

Country Name	FDI Conflict (US$)	Ranked
Nigeria	3375465532	1
South Africa	3036369985	2
Congo, Rep.	956309639	3
Sudan	943523862	4
Congo, Dem. Rep.	703900527	5
Uganda	428652793	6
Ethiopia	426397518	7
Angola	341008229	8
Cote d'Ivoire	270736812	9
Liberia	249445964	10
Chad	179239672	11
Sierra Leone	147523012	12
Cape Verde	67535330.7	13
Rwanda	61167740.5	14
Eritrea	44323798	15
Central African Republic	18711121.8	16
Burundi	11552524	17
Guinea-Bissau	9135889.03	18

Source: Generated by Author based on Data from WDI

4.4.3.4 Average FDI Net Inflow Received by Non-Conflict Countries

Table 4.6 presents the average FDI net inflow received by non-conflict SSA countries. The total number of non-conflict countries is 28. It can be observed that, Ghana received an average FDI net inflow of $1,070,332,817and is ranked first among the non-conflict countries, while Comoros is ranked last among the non-conflict countries with an average FDI net inflow of $3,474,002.713. Tanzania, Zambia, Mozambique and Equatorial Guinea are ranked second, third, fourth and fifth with an average net FDI inflow of $713,818,630.6, $630,140,256.4, $535,273,068.3 and $374,246,245.5 respectively.

The bottom five countries include Burkina Faso with an average FDI net inflow of $73,477,372.24and ranked 22rd. Cape Verde a is ranked 23rd with an average FDI net inflow of 67,535,330.69. Swaziland ranked 24th with an average FDI net inflow of $59,869,888.82, followed by The Gambia with an average FDI net inflow of $32,993,478.84at 25th position. And finally, Comoros is ranked last in 26th position with an average FDI net inflow of $3,474,002.713.

Table 4.6 Ranked Average FDI Net Inflow Received by Non-Conflict Countries

Country Name	Non-Conflict($)	Ranked
Ghana	1070332817	1
Tanzania	713818630.6	2
Zambia	630140256.4	3
Equatorial Guinea	535273068.3	4
Namibia	374246245.5	5
Madagascar	301319124.6	6
Botswana	270572787.7	7
Mauritania	247101532.2	8
Cameroon	241343283.5	9
Niger	233499875.7	10
Gabon	232422202.5	11
Kenya	194070630.1	12
Senegal	174895313.2	13
Mauritius	158564398.2	14
Mali	154176738	15
Zimbabwe	130793277.7	16
Guinea	130103516.4	17
Malawi	129444289.3	18
Togo	87557779.87	19
Lesotho	81743703.69	20
Benin	74685702.27	21
Burkina Faso	73477372.24	22
Cape Verde	67535330.69	23
Swaziland	59869888.82	24
Gambia, The	32993478.84	25
Comoros	3474002.713	26

Source: Generated by Author based on Data from WDI

From Table 4.5 and Table 4.6, it is evident that Nigeria which is ranked 1st with an average FDI net inflow of $3,375,465,532 among the non-conflict countries received more FDI on average than Ghana with an average FDI net inflow of $1,070,332,817which is also ranked 1st among the conflict countries across the study period. Furthermore, Guinea Bissau, which is ranked last (18th position) among the non-conflict countries, also received more FDI net inflow than Comoros, which is also ranked last (18th position) among the conflict countries.

4.5 Diagnostics Result

To ensure that the model is efficient, precise and can perform significant predictions, the researcher performed certain diagnostics test such as, the Likelihood Ratio test, Linktest and Goodness of fit test to test for significance in order to ensure that the data conforms to the stated assumptions tested for significance.

4.5.1 Likelihood Ratio Test, Linktest and Hosmer-Lemeshow goodness of fit test

The results from the logistic regression reports the likelihood ratio test for all the models and this helps us to verify or validate the model used. The likelihood ratio (LR) test is shown to be the preferred measure for evaluating coefficients estimated by maximum likelihood method (Long & Cheng, 2004). At a one percent level of significance, the overall goodness of fit (LR) is found to be highly significant, implying that the logistic model fits the data well across all models. The value of the Likelihood Ratio Index (LRI), also known as McFadden Pseudo R^2, ranges between zero and one, and is equivalent to R^2 in a conventional OLS regression model. From Table 4.10 we observe that the McFadden (pseudo) R^2, which indicates goodness of fit of a model, has a value 0.2371, 0.2469 and 0.2510 from models 1, 2 and 3 respectively.

Thus, model 1 (FDI at lag one) has a pseudo R-squared (R^2= 0.2371), which signifies that about 3.71% of the changes in the dependent variable (conflict presence) are jointly explained by the independent variables. Also models 2 and 3 have a pseudo R-squared of 0.2469 and 0.2510, respectively, which signifies that 24.69 percent and 25.10 percent of the changes in the model are jointly explained by the independent variables. The probability score (Prob>chi2) is significant at one percent level of significance across all the models. That is, the specified model is significant at one percent level of significance (Prob>chi2 = 0.000). This signifies that there is about 99.999% assurance that the model was not miss-specified. We also infer that the entire coefficient of the independent variable of the specified model is not simultaneously equal to zero.

In addition, the Hosmer-Lemeshow goodness of fit test is also tested in order to confirm the fitness of the model. The null hypothesis states that "the model is fit", and the result shows that with all the variables put together, the model recorded a probability value 0.2705 for Model 1, a probability value 0.2102 for Model 2, and a probability value 0.1779 for Model 3 which are greater than 0.05 significance level. This therefore implies that we fail to reject the null hypothesis. Thus, the models passed the test of fitness and therefore are not miss-specified (see Appendix B for full details).

Furthermore, the linktest is employed to also test the model specification, which indicates the predictive nature of the variables in the model. The linktest uses a linear predicted value (_hat) and a linear predicted value squared (_hatsq) as the predictors to rebuild the model. The variable _hat should be a statistically significant predictor, since it is the predicted value from the model. Therefore, if _hatsq is significant, the linktest is significant and if otherwise, it is not significant. This usually means that there are no omitted relevant variable(s).

Table 4.7 Results of Specification Test for Model 1

Conflict	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
_hat	1.010615	0.092103	10.97	0.000	0.830097	1.191133
_hatsq	0.014176	0.043	0.33	0.742	-0.070103	0.098455
_cons	-0.01271	0.101615	-0.13	0.900	-0.211874	0.186449

Table 4.8 Results of Specification Test for Model 2

Conflict	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
_hat	1.009095	0.092261	10.94	0.000	0.828266	1.189924
_hatsq	0.012787	0.043496	0.29	0.769	-0.072463	0.098037
_cons	-0.01224	0.104831	-0.12	0.907	-0.217706	0.193225

Source: Author's computation using data from WD I (2017)

Table 4.9 Results of Specification Test for Model 3

Conflict	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
_hat	1.037333	0.097411	10.65	0.000	0.846411	1.228255
_hatsq	0.042183	0.040717	1.04	0.300	-0.037622	0.121987
_cons	-0.03905	0.105514	-0.37	0.711	-0.245854	0.167751

Given the null hypothesis, H_o= There is no specification error (same for all the models). From Tables 4.7, 4.8 and 4.9, the p-value of _hat is 0.000 for Model 1, Model 2 and Model 3 respectively, and this shows that the _hat is significant for the three models. The p-value of _hatsq for Models 1, 2 and 3 are 0.742, 0.769, and 0.907 respectively, which not significant. We therefore fail to reject the null hypothesis, which means that the linktest is not significant. It is therefore evident that the three models do not suffer from specification problem and we conclude that the model has passed the test. Thus, the model specification is correct and the variables used in the regression do predict the model.

4.6 Regression Result

The regression result on the impact of FDI on conflict is presented in the tables below using the binary logistic estimation technique. The marginal effects are presented below with the regression variables in percentages and the FDI in natural logarithm (the coefficient for Model 1, Model 2 and Model 3 are presented in Appendix A).

4.6.1 Marginal Effect of conflict

In this sub-section, we analyzed the marginal effect in relation to the conflict presence in order to ascertain the exact effect in terms of magnitude of the various explanatory variables on the explained variable (see Appendix A for the coefficients from the logit regression). Table 4.10 shows the marginal effect results on the determinant of conflict and, we observe that the marginal effect was run in three different models based on the number of lags of FDI. This was done in order to ascertain the exact effect of previous FDI net inflows conflict over time.

Table 4.10 Marginal Effect (dy/dx) of Conflict after Logit Regression

	Model 1	**Model 2**	**Model 3**
VARIABLES	Conflict	Conflict	Conflict
L.LnFDI	-0.0268***		
	(0.0085)		
L2.LnFDI		-0.0345***	
		(0.0086)	
L3.LnFDI			-0.0334***
			(0.0085)
L1.GDP Growth	0.0011	-0.0002	0.0007
	(0.0024)	(0.0032)	(0.0024)
Population	0.1676***	0.1743***	0.1759***
	(0.0150)	(0.0148)	(0.0147)
Total Natural Resource	0.0134***	0.0134***	0.0129***
	(0.0013)	(0.0013)	(0.0013)
Unemployment	0.0111***	0.0125***	0.0129***
	(0.0026)	(0.0026)	(0.0013)
Democracy	-0.0251***	-0.0258***	-0.0261***
	(0.0049)	(0.0049)	(0.0050)
Ethnic Fractionalization	-0.0886	-0.0654	-0.0527
	(0.0702)	(0.0718)	(0.0747)
Education	-0.2761	-0.1836	-0.1756
	(0.3233)	(0.3315)	(0.3400)
Observations	794	757	726
Pseudo R2	0.2371	0.2469	0.2510
Prob>chi2	0.0000	0.0000	0.0000
LR chi2 (8)	247.91	246.54	240.28
Log likelihood	-398.8406	-376.0420	-358.4612

*** p<0.01, ** p<0.05, * p<0.1 Standard errors in parentheses

Source: Author's computation using data from WD I (2016)

Table 4.10 reveals that, FDI (main variable of interest) is highly statistically significant from Models 1 to 3, and it is also negatively related to the conflict across all models. In Model 1, FDI is statistically significant at 1% level of significance and has a marginal effect of -0.0263. This implies that a 1% increase in FDI net inflow, leads to 2.63 percent decrease in the likelihood of conflict, ceteris paribus. Thus, a discrete change in the FDI variable from 0 to 1, holding the other independent variables constant, is likely to reduce conflict by 2.63 percent. Also in Models 2 and

3, FDI is statistically significant at 1% for both models, with a marginal effect of - 0.0345 and -0.0334 units respectively. Hence, a 1percent increase in the net inflow of FDI leads to a decrease in the likelihood of conflict by 2.63 percent from Model 1, and 3.34 percent for both Model 2 and Model 3, respectively all other things being equal. The finding of the study is coherent with the study's expectation, which hypothesized an increase in FDI net inflow is likely to reduce conflict, which signifies is a negative relationship between FDI net inflow and conflict. This result is coherent with previous studies who found that, FDI inflow reduces the likelihood conflict (Gartzke, Li & Boehmer, 2001; Rosecrance & Thompson, 2003; Barbieri & Reuveny, 2005; Li, 2008; Lee & Mitchell, 2012).

Gartzke, Li and Boehmer, (2001) for instance explains foreign investment comes with benefits (such job opportunities, transfer of capital, technology, increases in management skills, increases in investment avenues, promotion of growth and reduction of income inequality) which tends to outweighs the incentives accompanied by the engagement in civil war. Therefore, citizens of host countries who before the investment by foreigners felt marginalized may not want to engage in violent protest since they become be better off than engaging in conflict.

Barbieri and Reuveny, (2005) further explains that inflow of FDI to a recipient country leads to transfer of capital, technical know-how (management skills), technology, investment, growth and reduction in income inequality and poverty levels as well as increased opportunity cost of engaging in conflict. The result has theoretical and empirical support. T That is, the findings agree with the Classical Liberal theory which proposes that the existence of a higher form of interdependence among individuals within a nation or countries is mutually beneficial to all states, thereby reducing the probability of conflict presence. In addition, the results support the Golden Arches theory, which explains that people in a particular domestic country will not be motivated

to engage in fighting one another (internal conflict) for fear of the resultant economic and personal losses (Friedman, 1999) and this will rather induce interstate peace.

GDP growth is negatively related to conflict presence with a marginal effect of 0.0002, but was not significant in Model 2. This therefore implies that a 1% increase in GDP growth of a country leads to a decrease in the likelihood of conflict by 0.02% as reported in Model 2, though it was not significant. Furthermore, GDP growth was also not significant in Models 1 and 3, though positively related to conflict. The associated marginal effects for the models are 0.0011 units for Model 1 and 0.0007 units for Model 3. The outcome of the study is not in line with the study's expectation, which hypothesized a negative relationship between and conflict. The finding from Model 2 agrees with a previous study by Loayza and Soto (2002), who argues that negative form of growth has the probability of increasing the conflict, since it makes hinder redistribution of resources especially in periods where there is stagnation or recession than periods experiencing increasing income levels, though the result from the current study was not significant. Also, the result from Model and Model 3 are not consistent with previous studies which found that GDP growth reduces conflict presence (Hergre, 2003; Collier & Hoefler, 2004; Barbieri & Reuveny 2005; Elbadawi & Hergre, 2008).

Population is highly statistically significant at one percent across all models (Model 1, 2 and 3).The variable is further positively related to conflict across all the models with the following marginal effects, 0.1662, 0.1743 and 0.1759 units for Model 1, Model 2 and Model 3, respectively. This implies that a one percent increase in population leads to an increase in the likelihood of conflict by 16.62%, 17.43% and 17.59% as reported in Models 1, 2 and 3 respectively in Table 5.7, all things being equal.

This finding is coherent with the study's expectation which hypothesized a positive relationship between population and conflict. The findings of the study is in accordance with a previous study by Fearon and Laitin (2003) who argued that factors such as large populations have more predictive power on the occurrence of conflict. This finding is also consistence with previous studies such as Fearon, (2005), Barbieri and Reuveny, (2005), who found that increase in population, increases the likelihood of conflict presence.

In a similar manner, total natural resources is positively related to conflict and highly significant at one percent across all models. The marginal effects of natural resources across the models are 0.0134 units for both Model 1 and Model 2, and 0.0129 units for Models 3. This signifies that a 1% increase in natural resource per GDP of a country leads to an increase in the likelihood of conflict by 1.34%, 1.34% and 1.29% as reported in Models from 1 to 3, all things being equal. The outcome of the study is consistent with the study's expectation of a positive relationship between natural resources availability and conflict presence. The finding is also in accordance with the literature, who found that natural resources endowment increases the likelihood of conflict (Kaldor, 1999; Collier & Hoeffler, 2000; Klare, 2001; Fearon, 2005; Brunnschweiler, 2007).

Unemployment is positively related to conflict in all the models and highly statistically significant at 1% for Models 1 to 3. The marginal effects of the unemployment variable are given as 0.0109 units for Model 1, 0.0125 units for Model 2 and 0.0129 units for Model 3. This signifies that, a 1% increase in unemployment leads to an increase in the likelihood of conflict by 1.09 percent,

1.25 percent and 1.29 percent for Models 1, 2 and 3, respectively. The outcome of the study is consistent with the study's expectation which hypothesized a positive relationship between unemployment and conflict. This finding is consistence with previous studies (Fox, 2001; 2004a; Palley, 2005).

However, the democracy variable is statistically significant at 1% across all models and negatively related to conflict. The marginal effect coefficients of the polity variable in the models are -0.0251 for Model 1, -0.0258 for Model 2, and -0.0261 for Model 3. This signifies that a 1% increase in the democracy variable of a country is likely to reduce the occurrence of conflict by 2.51%, 2.58%, and 2.61%, ceteris paribus as reported in models 1, 2, and 3 respectively. The result is consistent with the researcher's prior expectation which hypothesized democracy reduces the likelihood of conflict. The study further agrees with a previous study by Gates, Hegre, Jones and Strand (2006) who argues that states classified as democratic are more stable than states that are autocratic, and therefore less likely to engage in conflict.

Furthermore, ethnic fractionalization is negatively related to conflict in all the models but, it is not statistically significant across all the three models. The marginal effects for the ethnic fractionalization variable are -0.0886 units for Model 1, -0.0654 units for Model 2, and -0.0527 units for Model 3. Thus, ethnic fractionalization did not contribute to conflict significantly, even though it was negatively related with conflict. The findings of the study are not in accordance with previous studies, who argued that ethnicity raises the likelihood of conflict (Collier et al 2003; Frances Stewart, 2008; Esteban, Mayoral and Ray, 2012).

Lastly, the study found that the primary school enrolment variable did not contribute to conflict significantly, even though it was negatively related with conflict. The respective marginal effects from the results are -0.2761 units, -0.1836 units and -0.1756 units for Models 1 to 3. This finding is coherent with the study's expectation which hypothesized a negative relationship between primary school enrollment and conflict. But the variable contribution to the determinant of conflict in SSA was not significant. The findings' of the study is in accordance with previous studies, who argued that education reduces the likelihood of conflict, even though in this study, the variable was

not significant (Amamio, 2004; Thyne, 2006; Østby, Nordås, & Rød, 2009).

4.7 Chapter Summary

This chapter has analyzed the impact of FDI on conflict as well as the nature of conflict and FDI in SSA. The results indicate that FDI net inflow and democracy significantly reduces the likelihood of conflict negatively. However, variables such as natural resources, population, and unemployment significantly increase the likelihood of conflict. Ethnic fractionalization, GDP growth and education did not contribute significantly to conflict.

CHAPTER FIVE

SUMMARY, CONCLUSION AND POLICY RECOMMEDATIONS

5.1 INTRODUCTION

This chapter presents the summary of findings, conclusion and recommendations based on the results. The summary presents a snapshot of the study as well as the various highlights of the study. The inference based on the empirical study is captured in the conclusion while the recommendations and contributions are proposed based on the conclusion.

5.2 SUMMARY

This study primarily sought to evaluate the impact of FDI net inflows on conflict among countries in the Sub Saharan African region using logistic regression model as a measure for its analysis. It also examined the nature of FDI net inflow and conflict in SSA. A panel data of 44 countries were analyzed over the period of 1990 to 2015 due to availability of data. The major findings of this study are outline below.

The descriptive findings show that out of the total sample used in this study, about 41.86% of the countries have experienced conflicts before, while the remaining 58.14% have not experienced conflicts before in SSA. The average FDI net inflow received by SSA countries stood at $440 million. It is evident that FDI net inflows have been on the increase since the end of the cold war till date. However, on average GDP growth has been stable, the proportion of total male unemployment to the total labor force have been relatively low among SSA countries over the period. SSA countries are more of heterogonous (mixed) in terms of ethnicity, fairly democratic in terms of governance (most countries are democratic on average) and most people access to basic education on average and also characterized by more total natural resource endowment on average.

The findings from chapter three also, show that FDI net inflow on average to SSA has relatively been on the increase right from the end of the cold war (1991) till the year 2015. But in terms of comparing FDI net inflow to all conflict and all non-conflict countries at the year level, FDI net inflow to conflict countries on average exceeded the average FDI net inflow to non-conflict countries. But, in comparing the average FDI net inflow received by individual countries, FDI net inflow on average to the individual non-conflict countries has been on an upward trend, but the average FDI net inflow to individual conflict countries seems to have generally declined. Thus, at the country level (FDI net inflow to individual countries), non-conflict countries received more FDI on average than countries that are affected by conflict.

From the regression analysis, the results indicate that out of the eight variables studied, FDI, total natural resources, unemployment, population and democracy significantly determine conflict. Specifically, FDI net inflow and democracy significantly reduces the likelihood of conflict negatively. However, variables such as natural resources, population, and unemployment significantly increase the likelihood of conflict. Ethnic fractionalization, GDP growth and education did not contribute significantly to conflict.

The study found a significant negative relationship between conflict and FDI. Most studies have argued that the onset of conflict often reflects an intense state of anger, emotions, and strong conviction that goals can only be achieved through force or fighting. And such situations arise when citizens search for jobs but cannot find any, and feel that the resources of their nation are being controlled and spent by few people. Similarly, such situations may arise when individuals believe that they are marginalized or belittled in their societies. In addition, conflict may surface when people fail to allocate much weight to the consequence of conflict, including economic losses, social losses, etc. The weight of the consequence of conflict may include such negative

effects as disruption of business, fall in foreign investment and decrease in trading activities.

On the other hand, the inflow of FDI to recipient countries leads to the transfer of capital, technical knowhow (management skills), technology accessibility and advancement, employment creation and spillovers, reduction of income inequality and poverty levels as well as to an increase in the opportunity cost of engaging in conflict. For instance, FDI inflow to host countries helps its citizens who are destitute and unemployed to get work to do, in order to receive income and to be able provide for themselves and their families the basic needs in life; hence, increasing the opportunity cost of engaging in conflict. The inflow of FDI is economically essential to countries in SSA, since it helps to reduce the likelihood of conflict.

Democracy is significant and negatively related to conflict. This signifies the more democratic a country is the less likely that conflict will surface and vice versa. Unemployment is positively related to conflict and is highly statistically significant. This signifies that an increase in unemployment leads to an increase in the likelihood of conflict. Ethnic fractionalization is negatively related to conflict, but was not statistically significant. The total natural resource is positively related to conflict and highly significant. This signifies that an increase in natural resource per GDP of a country leads to increase the likelihood of conflict. GDP growth is negatively related to the conflict presence but was not significant. The study also found that the primary school enrolment variable did not contribute to conflict significantly even though it was negatively related with conflict.

5.3 Conclusion

The study examined empirically the impact of FDI on conflict in SSA using a binary logistic regression model over a sample period of 1990 to 2015. The study also examined the nature of FDI net inflow to conflict and non-conflict countries. The main findings indicate that FDI net

inflow significantly reduces the likelihood conflict in SSA. Thus, as FDI net inflow continuous to increases in SSA, the likelihood of conflict presence is low. The results also show that variables studied, democracy significantly reduces the likelihood of conflict negatively. However, variables such as natural resources, population, and unemployment significantly increase the likelihood of conflict. Ethnic fractionalization, GDP growth and education did not contribute significantly to conflict.

Furthermore, it is observed that FDI net inflow on average to SSA has relatively been on the increase right from the end of the cold war (1991) till the year 2015. In general terms, the average FDI net inflow to all conflict countries put together exceeded the average FDI net inflow to all non-conflict countries put together. But, in comparing individual countries, countries classified as non-conflict received more FDI on average than countries plagued with conflict.

5.4 Recommendation

Based on the findings and conclusion above, the following recommendations are offered for policy implementation, practice and future research. This current study adds up to the existing literature on the link between conflict and FDI, which are usually skewed toward the usage of conflict as the explanatory variable. The findings of this current study provides predictions on the importance of FDI in both conflict and non-conflict regions across SSA.

The main implication of this study is that, though previous research has not found a consistently negative relationship between FDI and conflict because their focus has mostly been the impact of conflict on FDI, with very few looking at FDI and interstate conflict, this study has identified that FDI inflow is essential since its presence aid in reducing the likelihood of conflict. On the other hand, conflict is bad; since its presence comes with social and economic cost such death, hunger, abduction or displacement of societies, low productivity, destruction of properties, etc. Therefore,

it is essential for countries to stop or avoid conflict and find peaceful ways of settling disputes.

We recommend that regulators together with policy makers should put strategic measures such as building relatively strong institutions, good legal systems, interest rates, etc. in place to ensure a continuous increase in the amount of FDI inflow into SSA since the main findings of this study indicates that an increase in FDI inflow has the probability of reducing conflict in SSA. In addition, measures must be put in place to help reduce the unemployment rate in SSA, since its presence increases the likelihood of conflict.

5.5 Suggestions for Further Studies

Our study, like all other research, must not be viewed as the end to the subject but must be seen as a continuation of the journey on the relationship between conflict and FDI. Future studies may extend this analysis to other aspects, for instance, by looking at county specific analysis since new insights might be gained from focusing deeply on specific countries' national box, since this current study focused on all countries in SSA across various years. Future research should explore the relationship between FDI and conflict by using alternative measures conflict and alternative methods of estimation.

Future researchers may also explore the analysis in relation to FDI and conflict duration. This will help ascertain the impact of FDI on the time it takes for conflict to end. Future studies should also explore the issue of context further. Finally, other future researchers may explore the reciprocal relationship between FDI and conflict and some other determinants, since from the literature, the issues around this subject have been handled by lagging the right hand side variables as was done here too.

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APPENDICES

Appendix A: Binary logistic Coefficient for the determination of Conflict

VARIABLES	M1 Conflict	M2 Conflict	M3 Conflict
L.LnFDI	-0.160***		
	(0.0500)		
L.GDPgrowth	0.00658	-0.000776	0.00466
	(0.0140)	(0.0192)	(0.0148)
LnPOPT	0.997***	1.056***	1.073***
	(0.110)	(0.114)	(0.116)
TNRGDP	0.0791***	0.0802***	0.0781***
	(0.00919)	(0.00942)	(0.00938)
UEMLF	0.0662***	0.0758***	0.0791***
	(0.0161)	(0.0167)	(0.0171)
Demo1	-0.152***	-0.157***	-0.160***
	(0.0301)	(0.0310)	(0.0321)
ethfrac	-0.499	-0.391	-0.319
	(0.405)	(0.419)	(0.438)
PePop	-1.641	-1.106	-1.066
	(1.925)	(1.999)	(2.066)
L2.LnFDI		-0.208***	
		(0.0522)	
L3.LnFDI			-0.203***
			(0.0520)
Constant	-14.22***	-14.51***	-15.01***
	(1.567)	(1.610)	(1.665)
Observations	794	757	726

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Appendix B

Logistic model for Conflict, goodness-of-fit test (Model 1)	
number of observations	794
number of groups	10
Hosmer-Lemeshow chi2(8)	13.04
Prob > chi2	0.2705

Logistic model for Conflict, goodness-of-fit test (Model 2)	
number of observations	757
number of groups	10
Hosmer-Lemeshow chi2(8)	11.6
Prob > chi2	0.2102

Logistic model for Conflict, goodness-of-fit test (Model 3)	
number of observations =	726
number of groups	10
Hosmer-Lemeshow chi2(8)	14.15
Prob > chi2	0.1779