CONFLICTS AND REFUGEES IN DEVELOPING COUNTRIES

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<u>Assata and Mahmoud Sesay</u>
(Mom and Dad)

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TO GOD BE THE GLORY.

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CHAPTER ONE: INTRODUCTION TO THE DISSERTATION

1.0 INTRODUCTION

This chapter provides an introduction to the dissertation starting with the description of overall economic situation of developing countries particularly focusing on Africa, Asia and Latin America. The chapter opens with a table indicating the trend of development that developing countries have gone through over four decades. This information gives the opportunity to state the problems which this dissertation seeks to address.

Stating the general economic situation of regions in the developing world does not reflect the specific problems this project intends to address since not all countries of these regions are included nor does the study include a forty year time span. Consequently, specifics of economic development are then provided for countries that have been studied in detail in this study. A justification for the choice of variables (conflict and refugees) is also provided. The chapter then states the aims and objectives of this research followed by an explanation of the structure and break down of the study. A more general introduction drawing on previous studies is then provided as a way of indicating the direction of the research. Finally, a section that defines key terms in the study is given before the conclusion. The chapter lays the foundation for studying refugee situations in the developing world and the impact of conflict on host and neighbouring countries.

1.2 An Overview of Regional Economic Development (1960-2000)

Table 1.1[1] gives a summary of the development trend in the regions of the developing world over four decades. The summary is based on decade averages for economic growth, investment, population growth and human capital accumulation. This information includes all countries in a region depending on data availability.

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[1] A supplementary table 1.1.2 is provided in the appendix with information on other economic development determinant variables for the regions.

Table 1.1 Annual growth rate of real GDP per capita

Region	1970-79	1980-89	90-2000	70-2000	80-2000
Middle East & North Africa	1.24	-1.21	1.02	0.35	-0.10
South Asia	0.19	3.03	2.90	2.04	2.96
Sub-Saharan Africa	-0.96	-1.15	-0.60	-0.90	-0.88
East Asia & Pacific	3.86	5.40	6.49	5.25	5.95
Latin America & Caribbean	-0.01	-1.17	0.95	-0.08	-0.11
Least developed countries	.	0.89	0.93	0.91	0.91
World (All countries)	1.73	1.22	1.28	1.41	1.25

Source: own calculations based on data from WDI, 2001 CD-ROM and the PWT 6.1.
70s is from 1975 to 1979 because of missing data

From the information in table 1.1, it is observed that the growth rate of real per capita GDP across regions in the world has not been smooth. While some regions have been doing well, especially the South East Asian countries, other regions have been growing in the reverse like sub-Saharan Africa and Latin America. Taking the growth rate of real per capita GDP of all countries in the world, growth has only been slightly positive but the subsequent decadal average has been reducing. Real per capita GDP averages for the regions (see table 1.1.2 in the appendix) also show sub-Saharan Africa as the region with the lowest average whereas Latin America has a higher average. Investment in physical capital has been generally moderate for all regions. However, East Asia has the highest investment rate by the end of the last decade with sub-Saharan Africa again investing the least in physical capital in that decade. The low rate of physical capital investment is expected to have reduced this regions growth with the additional high population growth rate. Investment in human capital was also low for most regions but life expectancy at birth was particularly low for sub-Saharan Africa, even lower than the average for all the least developed countries. Though illiteracy rates decreased over the decades for all regions, it was particularly low in Latin America, East Asia and the Pacific in the last decade. Secondary school enrolment is remarkably low for sub-Saharan Africa.

On the whole, a particularly observed trend is the mixed development record of the 1980s. Some developing countries made extraordinary strides in those ten years (South, East Asia and the Pacific). Their rapid growth and new presence in the world markets remain an inspiring example for other developing regions. Their peoples' outlook is one of hope and new achievements. The trend of the 80s is also similar to the 90s for these two regions although South Asia's growth rate went into decline while East Asia and the Pacific still experienced increasing positive growth. At the same time, however, these two decades (80s

and 90s) have been a painful decade where in we learnt the bitter lessons that development was reversed in sub-Sahara Africa and Latin America. Most of the countries in these two regions suffered reverses in growth rate of real per capita GDP. Even though the reverse in growth rate was mostly felt in the 1980s, the consequences of the decline were felt well into the 1990s. Also, a large number of the growth disasters-(countries that experienced large declines in real GDP per capita over the decades) are located in Sub-Saharan Africa (see table 1.2 in the appendix).

1.2.2 An overview of the economic situation of countries in the study

72 countries have been selected based on data availability for this study; 4 from North Africa, 40 from sub-Saharan Africa, 14 from Asia and the Pacific and Latin America and the Caribbean respectively[2]. Table 1.2 has been included in the appendix to this chapter specifically listing the growth rate of per capita GDP of countries included in the analyses of this study.

In North Africa, Egypt has been growing at a rate of 1.7% during the decade under study-1990 to 2000- Most of this growth took place in the last 5 years of the decade. Tunisia is the fastest growing economy in this sub-region; growing at a rate of approximately 2.9%. Algeria and Morocco on the other hand experienced a negative growth in their per capita GDP of about –0.4% to –0.02% respectively. For countries classified under sub-Saharan Africa, (which comprise 40 out of a total of 47), more than half of them (22 out of 40) have experienced negative growth with the Democratic Republic of Congo being the least growing economy, having a –8.4% reduction in real per capita GDP growth closely followed by Sierra Leone with a –7.7% reduction in growth rate. Both nations record higher reduction in growth rate of per capita GDP in the first half of the decade (1990-1995) possibly as a result of the onset of conflict in these countries. However, some countries in this region have been fairing relatively well. Notably, out of the 18 countries experiencing a positive per capita GDP growth, Lesotho, the fastest growing economy has a 4.3% growth rate followed by Mauritius with 3.8% and surprisingly Mozambique, a conflict emerging economy growing at a 2.9% in per capita GDP. Of the 14 countries in Asia selected for this study only two the -Philippines and Uzbekistan- have a negative per capita GDP growth of about –0.3 and –0.2%. Both countries are still better than the negative growth experienced by many of the 22 countries in

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[2] See chapter 4 on data for the study.

sub-Saharan Africa. Most of the remainders of the 12 Asian countries in this study are growing on average with more than 2% with Vietnam as, the highest growing at 5.1% and Sri Lanka, also war-torn like Mozambique, growing at 3.5%. Additionally, five of the 14 Latin American countries in this study experienced a negative growth with Costa Rica being the fastest growing economy with a per capita GDP growth rate of 2.9%. All these differences in the growth rate of per capita GDP between countries within the same region pose concern for this study. Asking questions and searching for answers which explain the dynamics of the behaviour of economies in the same or similar region remain paramount for this study.

Economists have long been engaged in explaining factors responsible for the growth rate differences among regions of the world, especially in developing regions. Their studies have tried to answer questions like how rich are the richest countries in the world relative to the poorest countries? Are poor countries catching up with the rich ones or are they (considerably) lagging behind? These questions and many others have been the subject of much empirical and theoretical work over the last decade and earlier. Authors have used legal systems, political situations, institutions, natural geographic factors, corruption and so forth, as their favourite variables that might have been responsible for the differences in the growth rate trends in the world. The outpour of research in this direction and their policy recommendations, notwithstanding, things have not changed much for most countries in the developing world. This creates the suspicion that either all the factors responsible for growth rate trend differences among countries in the developing world have not yet been identified; or the real problem has not been identified. This is why this study is underpinned by the suspicion that the prevalence of conflict in developing countries and the ensuing refugee flows in these regions might explain growth rate differences among countries in the developing region.

1.3   RESEARCH PROBLEM

Table 1.1 reminds us that under-development remains a recurrent phenomenon in most developing countries. Several years of development assistance and aid have not yielded the desired positive results for most developing countries. Economies for most African countries, unlike some of their Asian and Latin American counterparts have been at a continuous decline with living conditions today worse than during colonial times. In the post-colonial period, however, huge resources have been poured into reversing this trend, but very minimal, if any,

positive results are to be shown for most of these countries. Apparently the real problem has not been identified, or if identified, appropriate measures have not been put in place to reverse the situation. Huge resources have, therefore, been directed towards solving the wrong problems. Even though several factors have been identified as possibly responsible for the slow rate of growth in some African countries, this study seeks to find out whether the effect of conflict especially in the form of huge refugee flows is a leading cause for the failed attempts at economic development in many developing countries.

Conflicts in developing countries can be viewed as post colonial phenomenon and the largest cause of refugee flow. About 40% of countries in Africa have been in conflict in addition to the fact that this region is said to be hosting the second (after Asia) largest number of refugees. There is reason to believe that both of these factors could explain differences in per capita GDP growth between nations in Africa and their Asian and Latin American counterparts. Clearly, Africa, especially sub-Saharan Africa has been under performing compared to other developing regions.

Many reasons have been put forward as explanations for the rate of economic growth in developing countries. The aim of this study is to investigate whether refugees and conflict help to explain Africa's rate of economic growth. Can being in conflict and/or hosting refugees be an important factor explaining poor development outcomes for most developing countries? In trying to answer this question, the study investigates the effects of the refugee burden and the total years in conflict during 1990 to 2000 on the economies of African countries and on other developing regions. Reasons for the selection of these two variables are given in the next section.

1.4   JUSTIFICATION OF THE STUDY

A key question to answer at this point pertains to the necessity to explain why the interest in the selection of refugees and conflict as possible important factors in explaining poor development outcomes in developing countries. There are many reasons that may influence a researcher's choice of a particular topic. In this case, the prevalence of both conflict and refugee flow in Africa and other developing countries by the close of the 20th century has attracted my attention to this topic. An examination of the trend in forced migration globally will substantiate my claims.
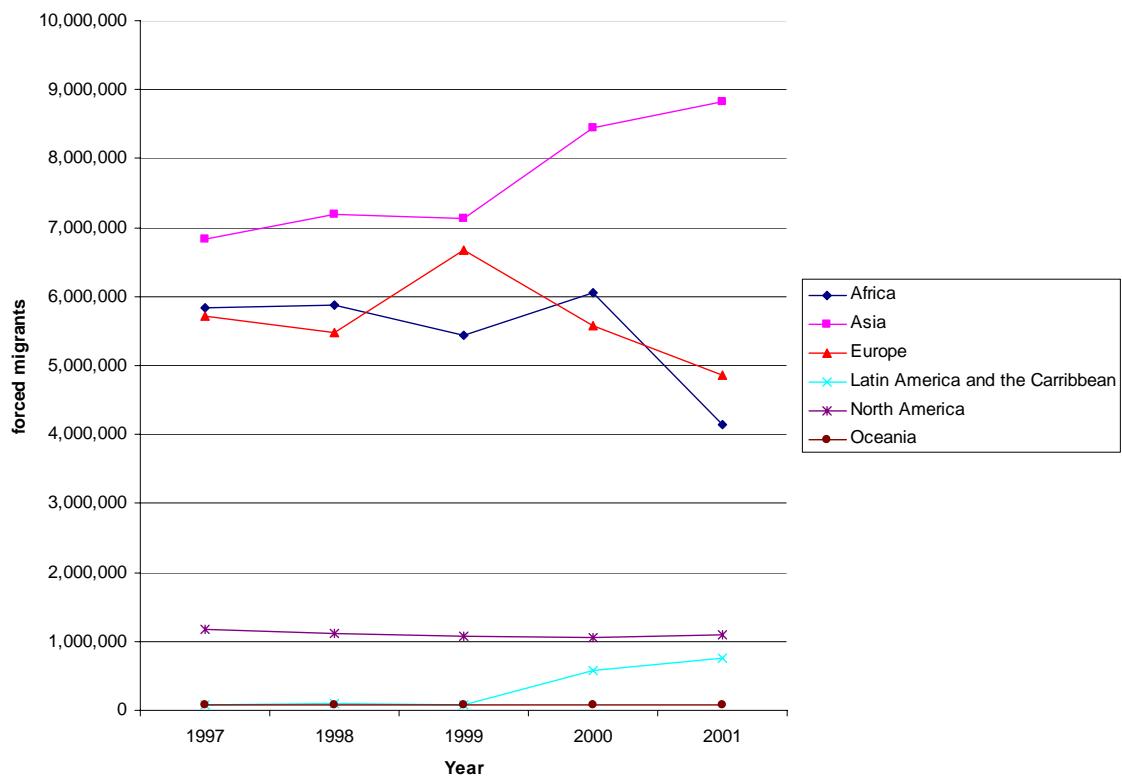
Figure 1.1   Populations of concern[3] to UNHCR by region of asylum, 1997-2001
Source: UNHCR Statistical overview 2000.

The figure above gives a general impression on the global pattern of forced migration[4]. It shows that Asia[5] has been the leading region in hosting forced migrants closely followed by Africa and Europe. However, the above diagram includes all 'population of concern to UNHCR' which are not necessarily the population that this study wishes to examine. To get a closer view of the relevant population of concern for this research, let us look at the trend in refugee flow.

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[3] Populations of concern includes refugees, the displaced, returnees etc. In short, all forms of forced migration.
[4]The definition of 'forced migration' promoted by the International Association for the Study of Forced Migration (IASFM) describes it as 'a general term that refers to the movements of refugees and internally displaced people (those displaced by conflicts) as well as people displaced by natural or environmental disasters, chemical or nuclear disasters, famine, or development projects.'
[5] Asia as a leading host could be attributed to the large populations of most Asian countries.
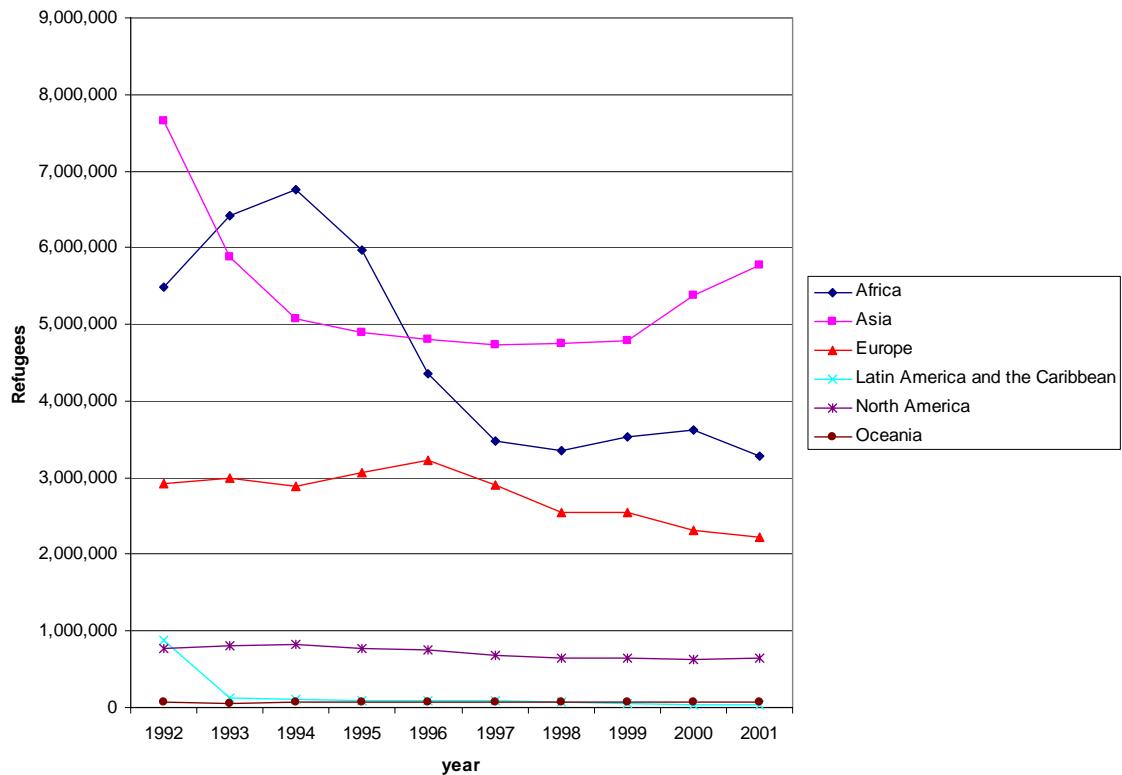
Figure 1.2 Refugee populations by region of asylum, 1992-2001
Source: UNHCR Statistical overview 2000.

Figure 1.1 shows the global trend of forced migration while figure 1.2 is specifically about refugees. Refugees[6] are an aspect of forced migration since the latter also includes displaced (forced migrants who have not crossed an international border). Africa and Asia are the regions that host the highest numbers of refugees, with Africa taking the lead in the early 90s and Asia from the middle of the decade onwards. Latin America and the Caribbean, comparatively, have fewer refugees.

The two diagrams above demonstrate that the subject matter under investigation merits the serious attention this research accords it. It should not be surprising that refugees emerge as the focal point of this research, because, in addition to the fact that the numbers are large enough to evoke researchers' attention, refugee issues should be multidisciplinary and international. It is also worth noting that although refugee issues have been long under debate, much of the emphasis has been on the welfare of refugees themselves (see Kibreab, 1987), and less on the burden or benefit (as the case may be) that they exert on the economies of

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[6] See sub-section 1.7 for who is a refugee

countries in which they are hosted. Given that refugee issues date back to the conflicts of previous centuries, what begs explanation is why the issue has gained prominence in present times? The refugee issue has been called a concentrating prism of the events of our time; but even if flights and expulsions are well-known themes in history, they have now reached an unprecedented global scope (Rystad 1990).

Again, the picture on the burden of refugees on receiving countries can also be seen by looking at the percentage of refugee per receiving countries' population. However, it still remains the work of the empirical model estimated (see chapter 5) to establish the magnitude and direction of causality of the refugee variable on economic growth. This is so because refugees arising mostly from conflict, may not only represent a burden to the host countries but also contribute to the economy of receiving countries in several ways, especially as workers and consumers. The calculation of the percentage of refugee per population could however also be suggestive, at least for illustrative purposes. Table 1.3 provides an indication of the burden of refugees on developing countries and do not measure their effect on economic growth. This is because some countries have large populations, which reduce the percentage of refugees. This is so especially for most Asian countries. Hence it is expected that the percentage for Asia would have been greatly reduced by the population of India and Bangladesh, both of which are countries included in this study.

Table 1.3 Regional Annual Percentage of Refugees per population

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
North Africa	0.17	0.17	0.21	0.21	0.20	0.17	0.17	0.15	0.14	0.14	0.15
Sub-S Africa	1.11	1.20	1.22	1.40	1.07	0.87	0.70	0.53	0.52	0.59	0.66
Asia	0.79	0.80	0.70	0.48	0.41	0.40	0.43	0.38	0.36	0.34	0.39
L. America[7]	0.93	0.54	0.52	0.08	0.07	0.06	0.06	0.05	0.05	0.05	0.03

Author's calculation

Interest in the conflict variable lies first of all on its direct effect on the flow of refugees. Conflict is identified in this study as the root cause of refugee movement. This is further substantiated when we look at table 1.5. The prevalence of conflict in developing countries

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[7] Latin America's large percentage of refugees per population from 1990 to 1992 is driven by Costa Rica and Guatemala whose percentage of refugees was 9, 4, 4% and 3, 2, 2% for 1990, 91 and 1992. These two countries were the second highest refugee host in the early 90s (in Latin America) after Mexico whose percentage of refugee hosted is lower because of its huge population. The large number of refugees in Costa Rica could have been driven by the conflicts in Panama and Nicaragua which are both Costa Rica's borders. Further, Guatemala's large refugees in the early 90s could possibly be the flow of refugees from its neighbour- El Salvador's war situation in 1989 to 1990 and this country's intermediate conflict in 1991. The conflicts in Nicaragua, Panama and El Salvador lasted for few years (only up to 1991), so the refugees would have returned, thereby reducing the percentage of refugees hosted in this region.

also draws my attention to the effect of this variable on economic growth. Table 1.4, like figure 1.1 and 1.2, gives a summary of the global prevalence of conflict.

Table 1.4 Number of Armed Conflicts by Region, 1989-2000

Year	Europe	Middle East	Asia	Africa	Americas
1989	2	4	19	14	8
1990	3	6	18	17	5
1991	6	7	16	17	5
1992	9	7	20	15	4
1993	10	7	15	11	3
1994	5	5	15	13	4
1995	5	4	13	9	4
1996	1	5	14	14	2
1997	0	3	15	14	2
1998	2	3	15	15	2
1999	3	2	14	16	2
2000	1	3	14	14	1

Table III of States in Armed Conflict report 2000, Uppsala University

It can be observed that Asia and Africa are the most conflict ridden continents. The prevalence of conflict in the Middle East and the Americas is comparatively low but by no means negligible. Consequently, this study investigates the effects of these conflicts in countries in the 4 developing regions that have the highest number of conflicts in the world: North Africa, sub-Saharan Africa, Asia and Latin America. More specifically, table 1.4.2 provides the annual prevalence of conflict for countries in the study for these four regions.

Table 1.4.2 Regional Annual Prevalence of conflict

					MINOR	CONFLICT						
	1989	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**
North Africa	0	0	0	2	1	1	1	1	1	1	0	0
Sub-S Africa	4	7	6	6	3	5	3	7	5	3	2	2
Asia	3	2	1	2	2	3	4	4	3	3	3	3
L. America	2	1	1	1	0	1	2	0	0	0	0	0
					INTERMEDIATE	CONFLICT						
	1989	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**
North Africa	1	0	0	0	0	0	0	0	0	0	0	0
Sub-S Africa	1	1	0	0	1	2	2	2	4	2	5	4
Asia	4	7	4	6	4	4	2	3	4	4	3	5
L. America	2	2	3	0	2	3	3	2	2	1	1	0
						WAR						
	1989	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**
North Africa	0	0	0	0	1	1	1	1	1	1	1	1
Sub-S Africa	5	6	6	3	2	1	0	0	3	7	5	4
Asia	4	4	3	3	2	0	1	1	1	1	3	3
L. America	3	3	1	3	1	0	0	0	0	1	1	1

Author's specification (countries in my dataset) from 'States in Armed Conflict Report 2000'. The number of countries in conflict for each region: 4 countries for North Africa, 40 sub-Saharan Africa, 14 for Asia and Latin America each.

From the table, the high prevalence of conflict in these countries is further highlighted as a justification to investigate the impact of conflict. This, however, is not the sole source of interest for the examination of conflict; this study is also interested in ascertaining what the externality of conflict is on other countries. Research on the effects of conflicts on the economies of developing countries is growing (see literature reviewed in chapter 3). Most authors have not looked at the externalities involved when countries are in conflict; especially on neighbouring or other countries. Analyses have focused on the effects of conflict on warring countries and not on neighbouring states which may actually suffer through no fault of their own. This study has also looked at the spill-over effects of conflicts.

In the next section, the aim of the study is stated and the means (objectives) by which this aim is achieved.

1.5   AIMS AND OBJECTIVES

The general aim of this study is to ascertain the contribution of refugees and duration of conflict to poor economic performance. The study focuses on all countries in Africa (subject to data availability) while broadening the scope of the analysis to include other developing countries in Asia and Latin America for comparative purposes.

Specific objectives include:

1. To give a general theoretical framework for the study of economic growth;

2. Review relevant literature for the study;

3. To collect relevant data from various sources on variables of interest;

4. To investigate the refugee burden and or benefit and its economic effects on developing countries;

5. To investigate the determinants of the movement of refugees and

6. To establish the externality of conflict on neighbouring countries

1.6 BACKGROUND OF THE STUDY

For several years, practitioners, academics and politicians involved with the development of Africa and other regions of the developing world have been pondering on economic progress in these regions. Researchers have tried to explain the reasons for the slow pace at which development in most of these countries has been painfully crawling[8]. From observation, most authors seem to concentrate on socio-economic, geographic or political factors and proving their effects on economic growth. In a similar manner, though with an additional unique perspective, this study investigates whether conflicts and refugee movements are important causes of the snail pace of economic growth (economic stagnation for some countries) in affected developing countries.

Using the conflict perspective, Collier (1998) examined the recovery from civil war but also considered the processes by which the economy is damaged during civil war; his study concluded that civil war is a devastating phenomenon likely to have large effects on both the level and composition of economic activity. He further noted that during civil wars, GDP per capita declines at an annual rate of 2.2% relative to its counterfactual. Considering that Africa had 51% of minor conflicts, 38% of intermediate conflict and 53% of war out of all global conflicts and wars during the period 1989 to 2000 (see summary statistics of the conflict variable in chapter 5), there is sufficient reason to believe that the presence of conflict

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[8] However, it is important to note that some countries in the developing world have grown quickly; especially those in South-East Asia. So it is important to acknowledge the huge diversity in terms of economic growth among countries in the developing world. Also, there are some notable exceptions across the African continent. Notably, in Southern Africa, South Africa and Botswana have been doing very well compared to other countries in the region. Mozambique has also been recovering at a fast pace from its war torn condition. With the added advantage of the newly discovered oil fields, Equatorial Guinea is now observed as being an outlier in growth regressions especially in this study. However, these countries are still few relative to the rest of the other countries in the developing region.

explains a greater part of its economic situation. Over the last 40 years nearly 20 African countries (or about 40% of Africa south of the Sahara) have experienced at least one period of civil war (Elbadawi and Sambanis 2000). Meaningful economic development cannot take place without peace as Mkandawire and Soludo, (2001), correctly noted. Elbadawi (1999) asserted that conflicts and poverty are inextricably linked since conflicts lead to destruction of capital, displacement of people and increased insecurity, creating a vicious circle between conflicts and poverty.

The most obvious cost of conflict could be the disruption of economic activities. They drastically reduce the per capita taxable capacity of the economy since businesses are more likely to wind up because of distortions, people flee and seek refuge in other countries or end up crowded in relatively safer areas of the conflicting country. Infrastructures are, consequently, destroyed leading to less economic growth (Collier and Hoeffler, 1998). Conflicts also redirect government expenditure to war instead of to developmental activities. As Collier (1998) rightly pointed out war leads to the diversion of public expenditure away from output-enhancing activities. He continued to show that the most obvious way in which civil war damages the economy is through the destruction of some resources. For example, part of the labour force is killed or maimed and bridges are blown up. Finally, in response to the deterioration in the economic environment, private agents will engage in *portfolio substitution*; that is, shifting their assets[9] out of the country.

The relationship between conflict and development has been a two sided one. Civil war is overwhelmingly a phenomenon of low GDP countries. And things that are meant to improve the conditions of developing countries expose them to more risk in times of conflict. Collier and Hoeffler (1998) found that possessing natural resources made things worse for countries in conflict because natural resources increase the chances of rebel victory, especially if the resource base is in the stronghold of the rebels.

On the part of refugees, it is postulated that the higher the number of refugees coming into a country the higher/lower her GDP per capita growth rate. This is so because refugees might have a positive or a negative effect on economic growth depending on several other socio-economic factors. First of all refugees increase the work force of receiving countries. This

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[9] Here assets should be understood to include human, physical and financial assets.

could be positive if they can be employed but they might produce a negative effect in terms of their burden if unemployed as they also cause social disruption. It is quite difficult to do an *ex ante* prediction of this variable since its effect might depend on several other conditions like the level of economic development of the host country. However, with reference to economic theory, increase in population (especially without the requisite increase in physical capital) is expected to reduce per capita GDP growth rate.

Intuition about international trade will predict that the number of neighbours a country has, the more it is expected to prosper from trade since its trading partners are expected to increase. Theoretical endogenous growth models predict that trade openness could positively influence economic growth because the flow of goods and investment across borders through international trade could be an effective means for diffusion of knowledge at the international level (Edwards 1992). However, improving trade links depends highly on several factors, such as language, currency, transportation and, most importantly, on the political stability of neighbouring countries. Crises in the neighbouring countries can impose heavy financial transaction costs on trade, as shown by the price paid by Malawi and Zimbabwe after the civil war in Mozambique (Mkandawire and Soludo 2001). Mkandawire and Soludo confirmed that conflict spills over into neighbouring countries not only in the form of refugees but also in the form of disruption of trade links and infrastructure and the worsening of Africa's image. Politically unstable neighbours will not only make trading impossible, but they will also serve as a source of burden, through the 'production of refugees', to its neighbours. On the other hand, it is expected that the more borders a country in conflict has, the better it is for its citizens who will have more flight options, and also the lesser the burden on one particular country.

Several studies have suggested several reasons for the flow of refugees. It is evident that one of the major causes of refugee flow is conflict or war. This is substantiated in this study by examining major refugee receiving countries, the origin of such refugees and by ascertaining if they must have left because of the presence of conflict or war[10]. The origins of major refugee populations are analyzed for the year 2000. UNHCR (the source of refugee data for this study) normally lists only the 10 highest 'refugee producing countries' annually. Seven

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[10] Chapter 6 empirically tests for the determinant of refugee movement in which conflict is a major variable on the right hand side.

countries have been selected from this list for the year 2000 because they are part of the countries in my data set. The state of the country of origin in terms of conflict has been assessed for the period 1989 to 2000 since conflict is expected to have a continuous effect on the flow of refugees, that is, a conflict of say, 1995 might continue to produce refugees in 1996.

Table 1.5 Indication of refugee flow as a result of conflict

Main countries of asylum	Country of origin[11]	State[12] of the country of origin 1989-2000
Pakistan/Iran	Afghanistan	War
Tanzania	Burundi	Minor and intermediate conflict and War
Uganda, D.R. Congo, Ethiopia, Kenya, C.A.R and Chad	Sudan	Intermediate conflict and War
Kenya, Ethiopia, Yemen, Djibouti	Somalia	Intermediate conflict and War
Zambia, D.R. Congo and Namibia	Angola	Intermediate conflict and War
Guinea and Liberia Sudan	Sierra Leone Eritrea	Minor and intermediate conflict and War War

Refugees to Pakistan and Iran came mainly from Afghanistan which was at war from 1989-2000. Burundi has experienced all the three types of conflict for the 12 year period. It has been in intermittent conflict situations. It had a minor conflict for 5 years and an intermediate conflict and war for two years each. The case of Sudan was also clear; it had war for 9 years and intermediate conflict for two years. Somalia was peaceful from 1997 to 2000 after being at war from 1989 to 1992 with an intermediate conflict record from 1993 to 1996. Therefore, refugees from Somalia in the year 2000 were not as a result of ongoing conflict but a result of the spill over of previous years of conflict situations. Angola has a history of being in conflict for a very long time. From 1989 to 2000, Angolans only had two years, 1995 and 1996, in which they were 'peaceful' and they had an intermediate conflict in 1995. But they were at war for 9 years. Sierra Leone was in the state of an intermediate conflict in 2000. It had a minor conflict for 3 years (1990 to 1992), an intermediate conflict for 4 years (1993 to 1996), and had a war for 2 years in 1998 and 1999, followed by another intermediate conflict in 2000. Eritrea has been at war for 6 years at different points in time: first, from 1989 to 1991, and then from 1998 to 2000. It is abundantly clear that the flow of refugees from the aforementioned countries most have been as a result of conflicts in these countries.

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[11] UNHCR (2000).
[12] Sollenberg (2001).

As Melander (1990) observed, wars and armed conflicts have been, and continue to be, a major cause of massive flows of refugees. Africa and most other developing nations account for a greater percentage of the global refugees. It is also believed that many of these refugees cross the nearest border. In many cases this leads to just another developing country. Some writers, especially Melander, noted that the massive flow of refugees should find their solution in neighbouring countries, think this is an obvious situation.

Conflict data on all countries used in this study, according to the statistics given in the report, 'States in armed conflict 2000' are divided into three categories; namely, minor, intermediate conflict, and war (Sollenberg 2001). These are described on the next page. It is observed that the type of conflict reflects the intensity of the situation, which, in this report is measured according to the number of deaths generated by the conflict. The intensity of the conflict (assessed by the number of battle related deaths) could be used as a proxy to determine the magnitude of flight. Therefore, the intensity of the conflict is expected to have a positive relationship with the number of refugees. In other words, the heavier the conflict (war as opposed to intermediate conflict, and the latter as opposed to minor conflict), the higher the number of people who flee and vice versa. This point remains the key question for the empirical results to answer. Another important factor to consider here is the duration of the conflict situation. The longer the conflict, the more refugees it is expected to produce. In this regard, the mere presence of conflict is not enough to conclude that it will lead to the flow of refugees. Rather, the intensity and duration of the conflict is a more reliable variable to look at. In addition, the nature of the conflict could also affect the flow of refugees. A genocide which aims to eradicate a particular ethnic group is expected to generate more refugees than a war between a particular faction and government troops. The latter situation is a rare case in most developing countries. Experience has shown that civilians are mostly the target in any type of conflict resulting in the huge number of refugees in those parts of the world.

This section has discussed the general introduction to the issues investigated in this study. Some terms have been used which might leave the reader confused. The next sub-section will now define key terms as they relate to the current study.

1.7 DEFINITION OF KEY TERMS IN THE STUDY

Some basic definition of the two main variables in this study will help at this point. Reliability[13] of refugee data has been widely argued for, and a key reason for such unreliability normally lies on which definition of a refugee is used by the source of data collection. For decades, UNHCR has collected annual statistical data on refugees through its country offices. Generally, the data is compiled by the UNHCR country office in consultation with the host government. This, then, might produce several definitional problems since most countries have regional instruments, such as the OAU convention for Africa, for example, with their specific definition of who a refugee is. It is obvious that the refugee definition will be the guiding force in data collection. Most specifically, refugees (according to the source of refugee data, the UNHCR statistical year book 2001) are defined as persons who are recognized as refugees under the 1951 Convention[14] relating to the status of Refugees or its 1967 Protocol, the 1969 OAU Convention[15] Governing the Specific aspects of Refugees in Africa, persons recognized as refugees in accordance with the UNHCR statute, persons granted a refugee-like, humanitarian status and those provided with temporary protection. The refugees treated specifically in this study are those on whom data is collected on by the global refugee agency, the UNHCR, who are mostly refugees, settled in camps under the supervision of the agency.

Conflict data obtained from the 'states in armed conflict 2000' report defines armed conflict as 'a contested incompatibility which the use of armed force between two parties, of which at least one is the government of a state, results in at least 25 battle related deaths. The separate elements (use of armed force, arms, 25 deaths, party, government, state etc) of the definition are operationalised in this report (Sollenberg 2001: 21).

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[13] See chapter 4.

[14] The official definition of a refugee according to the 1951 Geneva Convention (Article 1A(2)) is, "refugee" is a person who, "owing to well founded fear of being persecuted for reasons of race, religion, nationality, membership of a particular social group or political opinion, is outside the country of his/her nationality and is unable or, owing to such fear, is unwilling to avail himself/herself of the protection of his country; or who, not having a nationality and being outside the country of his/her former habitual residence as a result of such events, is unable or, owing to such fear, is unwilling to return to it."

[15] The Organization for African Unity, (OAU) Convention Governing the Specific Aspects Of Refugee Problems In Africa first defines a refugee according to the UNHCR 1951 definition above, and adds that the term "refugee" shall also apply to every person who, owing to external aggression, occupation, foreign domination or events seriously disturbing public order in either part or the whole of his country of origin or nationality, is compelled to leave his place of habitual residence in order to seek refuge in another place outside his country of origin or nationality.

This report further categorizes conflict into three groups. *Minor armed conflict* is defined as one with at least 25 battle-related deaths per year and fewer than 1,000 battle-related deaths during the course of the conflict. *Intermediate conflict* is that with at least 25 battle-related deaths per year and an accumulated total of at least 1,000 deaths, but fewer than 1,000 per year. Finally, *War* is defined as leading to at least 1,000 battle-related deaths per year. Major armed conflict includes the two most severe levels of conflict, i.e., intermediate armed conflict and war.

The following section will now provide an overview of the dissertation by briefly presenting the contents of each chapter.

1.8 STRUCTURE OF THESIS

The dissertation has eight chapters. Chapter one offers a general introduction to the dissertation. This chapter has given a brief description, as a background, of the economic status of countries that are selected for this study. The problem envisaged has also been stated and justification given for the choice of factors presumed to be responsible for the stated problems. The chapter further states the aim of this study while providing objectives on how this aim is to be achieved by the end of the study. A general discussion drawing briefly on previous studies is also presented in chapter one.

The second chapter describes the methodology of the study. It gives a detailed description of the theoretical framework of the study. Theoretical analyses of the preferred model for this study and the implications of the model are further discussed in this chapter. The single cross section and panel data analysis, selected methods for estimating growth regression are also described in chapter two.

Chapter three reviews literature as it is related to the study. The literature chapter covers all major issues in the study. The chapter reviews literature relating to economic development of developing countries, generally on the empirics of growth, on the effects of hosting refugees; studies confirming the empirical and theoretical relationship between conflict and economic growth are also reviewed.

The fourth chapter is dedicated to all that is related to the collection and compilation of the data for the study. It shows the sources of data, describes the variables while giving reasons for their selection; and uncovers the problems of using secondary data in this study mostly commenting on 'reliability' of data. The chapter presents descriptive statistics for the study and regional data description.

The fifth chapter is titled 'growth regression' and it present results of the regressions. It mainly includes the estimation of data collected and the interpretation of results. Before presenting the results, theoretical discussions on the effects of conflict and refugees are engaged on. Results on bivariate growth regressions of conflict and refugees on non-GDP data are first presented before the general growth regressions. Results of cross sectional data estimated by Ordinary least squares and panel data estimated by fixed and random effects models have been presented in this chapter. The results have been interpreted based on what economic theory and intuition suggests. This chapter also involves the use of some literature material to further substantiate results of this study by comparing them with those of other authors. It concludes by presenting country specific analyses for a few countries of this study to complement theoretical and empirical results.

The sixth chapter considers the determinants of refugee movements. The chapter gives theoretical evidence on the determinants of refugee movement in developing countries and empirically analyses these factors as well as those that possibly determine refugees' choice of destination country. In essence, the chapter analyzes the 'push' and 'pull' factors of refugee migration in developing countries. The specific data set used in the analyses of the determinants of refugee movements is described in this chapter.

Chapter seven takes up another major issue in this study. It analyzes the impact of conflict on neighbouring countries. The chapter begins by discussing, with the use of economic theory, the general effects of conflict in one country on economic growth of other (neighbouring) countries. It provides results on empirical evidence confirming that conflict in one country affects economic growth in neighbouring countries but also affects several non-GDP variables.

Finally, the eighth chapter concludes the study. It summarizes the findings of the study, presents conclusions, suggests policy recommendations, discuses the limitations of the study as well as its achievements and suggests further areas for future study related to this work.

In summary, chapter one introduces the dissertation; chapter two is on methodology, chapter three is a literature review; and chapter four focuses on data for the study. Chapters 5, 6 and 7 present results of the various aspects investigated in the study and chapter 8 concludes. The next sub-section now shows the general structure of the result chapters 5, 6 and 7.

1.8.2   General Framework

The use of growth models and empirical model specifications is just one aspects of the method followed in this study as shown in chapter 2. Generally, the chapters with results of the study (chapters 5 through 7) follow a similar pattern. These chapters first have a theoretical discussion of the key issues each presents. Where the data is not described in the general data chapter (4), the specific data used in each chapter is also described. It was not possible to include the description of data for the entire study in one chapter because the use of sub-data set was inevitable. As a result, chapter 4 has a description of data for the general frame while sub-data sets are described in the specific chapters within which they are used. The study also reviews literature for the main chapters (5, 6 and 7) of this study but these have all been grouped into chapter 4. To further compliment the theoretical discussion and empirical findings of the effects of refugees and conflict on economic growth, the study provides country specific analysis of conflict and refugees.

In summary, the method of this study is by first discussing theoretical effects of the selected variables (conflict and refugees) and their effects on economic growth, collects data and with the use of econometric estimation techniques substantiate the theoretical debate empirically. Furthermore, because data could be missing for some very important observations for this study, or sometimes not reliable, the study also carried out country specific analysis.

1.9 CONCLUSION

This chapter has given a detailed introduction to the entire dissertation. The research problem is stated by presenting an overview of global economic development and regional trends for the countries in the study. Justification for the identification of refugees and the prevalence of

conflict in developing countries, as factors that could explain growth rate differences among developing countries, is also discussed. The aims and objectives of the study are stated followed by a general discussion forming the background of the study. The chapter also described the general structure of the dissertation.

The next chapter will now outline a detailed research methodology for the study.

1.10 APPENDIX TO CHAPTER ONE

Table 1.1.2 Economic development in developing countries from 1960 to 2000

Regions	Real GDP per capita				Investment				Population growth rate			
	60s	70s	80s	90s	60s	70s	80s	90s	60s	70s	80s	90s
Middle East & North Africa	.	4945	4540	4729	.	28	26	23	2.44	2.59	2.81	2.19
South Asia		1077	1285	1792	16	18	22	23	2.14	2.15	1.99	1.91
Sub-Saharan Africa		1868	1744	1569	16	21	18	17	2.33	2.51	2.61	2.62
East Asia & Pacific		1015	1550	3017	19	28	32	34	1.90	1.82	1.45	1.25
Latin America & Caribbean		6984	6668	6481	20	23	21	21	2.45	2.19	1.81	1.64
Least developed countries		.	1029	1054	12	14	15	18	2.19	2.29	2.31	2.47
World (All countries)		5079	5578	6378	24	25	23	23	1.77	1.71	1.54	1.44

Regions	Life Expectancy at birth[1]				Illiteracy rate				Secondary School enrolment[2]			
	60s	70s	80s	90s	60s	70s	80s	90s	60s	70s	80s	90s
Middle East & North Africa	51	56	63	68	-	65	53	41	-	34	50	60
South Asia	48	52	57	62	-	65	57	49	-	24	34	48
Sub-Saharan Africa	43	47	50	47	-	68	57	44	-	10	20	26
East Asia & Pacific	57	63	67	69	-	38	26	17	-	42	42	62
Latin America & Caribbean	59	63	67	70	-	23	18	13	-	35	47	75
Least developed countries	42	45	49	51	-	69	61	52	-	12	16	29
World (All countries)	57	61	65	66	-	-	-	-	-	42	51	65

Source: own calculations based on data from the PWT 6.1 and WDI, 2001 CD-ROM

The average for least developed countries in the 80s is from 1982-89

1 Life expectancy is the value of the lat year in the decade that is available: 1967, 1977, 1987 and 2000

2 Secondary school enrolments (% of Gross) are the nearest year's data available in the decade: 1975, 1985 and 1998 except for SSA whose value for the 90s is 1996

Table 1.2 Growth rate of per capita GDP for countries in the study.

Countries	GDP Per capita growth rate		
	1990-2000	**1990-1995**	**1996-2000**
North Africa	**Growth rate**	**Growth rate**	Growth rate
Algeria	-0.42	-1.44	0.32
Egypt, Arab Rep.	1.65	0.90	2.11
Morocco	-0.02	-0.71	-0.99
Tunisia	2.87	2.48	2.28
Regional Average	1.02	0.30	0.93
Sub-Saharan Africa	**Growth rate**	**Growth rate**	Growth rate
Angola	1.18	2.87	0.33
Benin	1.32	1.32	1.01
Botswana	1.75	1.19	1.61
Burkina Faso	2.24	2.41	1.33
Burundi	-3.99	-4.47	-1.24
Cameroon	-1.19	-3.82	1.23
Cape Verde	3.06	3.39	2.62
Cen. African Republic	-1.06	-1.31	0.73
Chad	-0.78	-0.75	-0.29
Comoros	-2.80	-3.26	-1.46
Congo, Dem. Rep.	-8.39	-9.10	-3.14
Congo, Rep.	-1.24	3.63	-6.83
Cote d'Ivoire	-1.57	-2.47	-0.87
Ethiopia	1.12	0.63	0.43
Gabon	-0.33	1.31	-2.30
Gambia, The	-1.04	-2.79	1.05
Ghana	1.56	1.77	1.06
Guinea	0.59	0.48	0.45
Guinea-Bissau	-1.10	1.27	-4.88
Kenya	-1.61	-1.16	-1.84
Lesotho	4.27	5.27	1.94
Madagascar	-1.79	-2.74	-0.23
Malawi	1.17	1.76	0.20
Mali	1.08	0.76	1.42
Mauritania	1.57	3.40	-0.54
Mauritius	3.82	3.97	2.96
Mozambique	2.91	1.59	3.97
Namibia	1.72	1.64	1.26
Niger	-1.94	-2.33	-1.08
Nigeria	-0.47	-0.75	0.08
Rwanda	-2.14	-7.18	1.11
Senegal	0.24	-0.78	1.36
Sierra Leone	-7.76	-8.84	-6.30
South Africa	-0.80	-1.48	-0.38

Please continue on next page

Countries	GDP Per capita growth rate		
	1990-2000	**1990-1995**	**1996-2000**
Swaziland	0.06	0.25	0.54
Tanzania	-0.63	-1.46	0.20
Togo	-1.76	-1.88	-2.24
Uganda	2.79	3.60	1.08
Zambia	-2.74	-4.27	-1.57
Zimbabwe	-0.86	-0.63	-2.23
Regional Average	**-0.34**	**-0.47**	**-0.24**
Asia	**Growth rate**	**Growth rate**	**Growth rate**
Bangladesh	2.64	2.70	2.26
Cambodia	1.84	3.18	-0.14
India	3.19	3.44	2.08
Indonesia	2.40	5.90	-1.87
Iran, Islamic Rep.	2.12	3.17	0.54
Lao PDR	3.59	4.04	2.50
Nepal	2.02	2.84	0.71
Pakistan	1.18	2.54	-0.27
Papua New Guinea	1.61	6.00	-3.53
Philippines	-0.31	-0.58	-0.29
Sri Lanka	3.49	4.04	2.52
Thailand	3.10	7.80	-2.32
Uzbekistan	-0.18	-1.64	1.60
Vietnam	5.09	6.36	2.57
Regional Average	**2.27**	**3.56**	**0.46**
Latin America	**Growth rate**	**Growth rate**	**Growth rate**
Argentina	2.69	4.78	-0.04
Colombia	-3.42	-5.07	-1.31
Costa Rica	2.89	2.68	3.64
Ecuador	-0.65	0.61	-1.97
El Salvador	2.10	4.06	0.58
Guatemala	0.96	1.60	0.44
Haiti	-3.12	-5.16	-0.92
Mexico	1.40	0.17	2.23
Nicaragua	1.12	2.70	0.07
Panama	2.34	3.68	1.13
Paraguay	-0.86	0.88	-2.12
Peru	1.84	3.92	0.00
Trinidad and Tobago	1.91	0.87	2.44
Venezuela, RB	-0.69	1.22	-1.91
Regional Average	**0.61**	**1.21**	**0.16**

CHAPTER TWO: METHODOLOGY

2.0 INTRODUCTION

In chapter one, an introduction to the dissertation is provided while stating the research problem. The chapter gave an overview of per capita GDP growth rates in different regions of the world and briefly explained the levels of the determinants of growth (investment, population growth, initial per capita GDP, and so forth). The foregoing chapter concludes that there are observable per capita GDP growth rate differences among regions of the world. This study identifies the prevalence of conflict and refugee flow in explaining per capita GDP growth rate differences among countries in Africa, Asia and Latin America. This chapter deals with the methodology of the study; it offers clarification of the process taken in using conflict and refugee flows to explain per capita GDP growth rate differences among countries in the developing world, and describes the procedures employed for the estimation of the effects of refugee and conflict on economic growth.

The chapter begins by discussing the emergence of growth theory and moves on to briefly discuss the different influential growth models. It, further, explains the framework on which the study is based and describes the preferred growth model in detail. In addition to this, the estimation methods (ordinary least squares-OLS-, fixed and random effects models) are also discussed.

2.1 GROWTH THEORY

This section starts by tracing the emergence of growth theories over the past few decades. It then discusses the ensuing growth models and highlights which of them is most widely used in the literature that, in fact, forms the theoretical framework of this study. The Solow growth model is discussed at length, highlighting its strengths and weaknesses.

Theories of economic growth owe their foundation to economists of few centuries ago. Barro and Sala-i-Martin (1995:9) state, 'classical economists, such as Adam Smith (1776), David Ricardo (1817), and Thomas Malthus (1798), and, much later, Frank Ramsey (1928), Alwyn Young (1928), Frank Knight (1944), and Joseph Schumpeter (1934), provided basic ingredients that appear in modern theories of economic growth'. This clearly indicates that the emergence growth theories in the 20th century were closely linked with the work of earlier

economists from the 18th and 19th centuries. Their contribution to the general theory of economics served as a pillar for growth theories.

Specifically, there have been three major surges in growth theory in the 20th century. The first occurred in response to the work of Harrod (1939) and Domar (1946), hence known as the Harrod-Domar model. The second surge was the neoclassical response to the Harrod-Domar model. In the 1960s, growth theory consisted mainly of the neoclassical model, as developed by Ramsey (1928), Solow (1956), Swan (1956), Cass (1965), and Koopmans (1965) (Barro, 1997). Solow (1956), according to Basu, with whom many development economists will agree today, was the most important trigger for the neo-classical growth model. There is an enormous outpouring of papers and books on the growth theory in the decades that followed, as well as up to present day growth analysis, however, the Solow model remains influential. The third surge of the growth models came from the works of Romer (1986) and Lucas (1988) and has given rise to what is now called the theory of endogenous growth.

Looking at growth models, one observes a particular trend: subsequent growth theorists recognise the modelling deficiency of their predecessors and seek to improve the situation. As the author/initiator of the dominant neo-classical model, Solow[1] (1988:307) himself observed, 'growth theory did not begin with my articles of 1956 and 1957, and it certainly did not end there. Maybe it began with *The Wealth of Nations*; and probably even Adam Smith had predecessors'. He continued by saying that in the 1950s he was following a trail that had been marked out by Roy Harrod and by Evsey Domar. The neo-classical theorists, then, laid emphasis on diminishing returns to factors of production, unlike the Harrod-Domar model. Similarly, in a quest to explain the continued growth of some countries, which was not properly incorporated by the neo-classical models, the new growth theorists (Endogenous growth models) resorted to explaining growth endogenously. Barro (1997:4) noted, "recent work on endogenous growth theory has sought to supply the missing explanation of long-run growth. In the main, this approach provides a theory of technical progress, one of the central missing elements of the neoclassical model"[2].

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[1] This is the lecture Robert Solow delivered in Stockholm, Sweden, December 8, 1987, when he received the Nobel Price in Economic Science.
[2] Barro (1997) states that the inclusion of a theory of technological change in the neoclassical framework is difficult. However, the standard competitive assumptions cannot be maintained. These assumptions work well in the framework of Ramsey, Cass and Koopmans.

Growth models themselves have not only been posited for their own sake, they have also provided very useful insight into changes in economic growth. Growth theory provides a framework within which one can seriously discuss macroeconomics policies that not only achieve and maintain full employment but also make a deliberate choice between current consumption and current investment, and, therefore, between current consumption and future consumption. In addition, growth theory is said to have been invented to provide a systematic way to talk about and to compare equilibrium paths for the economy. In that task it has succeeded reasonably well (Solow, 1988). Today, growth theory has been widely used as a framework to understand the underlying causes of differences in economic growth within and among countries, a purpose for which growth theory is also used in the current study.

Nevertheless, the relevance of growth theories in explaining per capita GDP growth differences among countries or regions of the world has been questioned by prominent economists. Some of them have been very sceptical about the relevance of growth theories and others[3] question the empirical validity of the models. The resurgence of interest in the theory of economic growth has, to quote Solow (1994: 52), "an air of promise and excitement about it". He also noted that it is too early to fully evaluate endogenous growth theory but it is of considerable potential interest of development because it attempts to address issues of importance to developing countries. One of the most powerful criticisms on growth models has come from Douglass North, who has long studied historical records, and, who argues that growth theory, as it has evolved from neoclassical theory, is unhelpful in explaining the observed trends and patterns (Basu (1997:62). "In fact," he writes, "to put it bluntly, the growth theory stemming from neo-classical economics, old or new, suggests not only ignorance of the empirical evidence, historical or contemporary, but a failure to recognise that incentives matter…" (North, 1996:3).[4]

The present study is aware of the shortcomings of growth models and takes these points seriously. It remains critical of the preferred growth model but, until appropriate or better models are provided, the study, following its predecessors, uses the Solow growth model as a framework.

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[3] See Pack (1994) for example.
[4] As cited in Basu (1997:62).

2.2   THE SOLOW GROWTH MODEL[5]

As mentioned above, in economic growth analysis, three main theories in the 20th century have been very influential over the years: the Harrod (1939)-Domar (1946) model, the most important trigger of the neoclassical model (Solow 1956 Model) and, most recently, the endogenous growth model. Most empirical analyses of growth have had their framework based on one of these models. The revival of interest in growth theory and empirics is now about ten years old, as (Barro 1996) noted. The initial excitement centred on the recent endogenous growth models. However, Barro continued that, the recent empirical work on growth across countries and regions has not received its main inspiration from the new theories. Rather, the standard applied framework derives more from the older, neoclassical model, as extended to incorporate government policies, accumulation of human capital, fertility decisions and the diffusion of technology. Accepting that the Solow model is widely used, and that the empirical estimation in this study is based on this model, it is now necessary to state the basic features of the model.

2.2.2   Basic features of the Solow Model

In the Solow model, growth in per capita GDP depends on

- initial per capita GDP, $y(0)$,
- the initial level of technology, $A(0)$,
- the rate of technological progress, g,
- the savings rate, s,
- the growth rate of population, n,
- the depreciation rate, δ,
- the share of capital in output, α, and
- the rate of convergence to the steady state, λ.

Drawing on previous studies by Barro and Sala-I-Martin (1995) and MRW (1992) the theoretical Solow growth model is derived below. The simple Solow model, commonly known as the textbook version, depicts a country's output, Y, as a function of capital, K, labour, L, and knowledge or the 'effectiveness of labour', A_t. Thus:

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[5] Significant reference is drawn from the work of Hoeffler (2000) in this section.

$$Y(t) = K(t)^a \left(A(t)L(t)\right)^{1-a} \quad 0 < a < 1 \quad \text{...........................} \quad (1.0)$$

The two inputs, capital and labour, are paid their marginal products. With the assumption of a Cobb-Douglas production function, production[6] at time t is given by equation (1.0). Note that 'A' is subscripted by time here because the model further assumes, for simplicity, that the level of knowledge (or technology) progresses over time at a constant, exogenously determined, rate. So the model takes the rates of saving, population growth and technological progress as exogenous growing at rates n and g :

$$L(t) = L(0)e^{nt} \quad \text{..........................} \quad (1.1)$$

$$A(t) = A(0)e^{gt} \quad \text{..........................} \quad (1.2)$$

The number of effective units of labour, $A(t)L(t)$, grows at rate $n + g$. Given the assumption of constant returns to scale in its factors of production, the production function can be rewritten as:

$$Y = F(K,L) = L \cdot F\left(\frac{K}{AL}, 1\right) = L \cdot f(k) \quad \text{.........................} \quad (1.3)$$

Where,

$$k = \frac{K}{AL} \quad \text{as the capital-labour ratio and}$$

$$y = \frac{Y}{AL} \quad \text{GDP per capita}$$

Writing equation (1.3) in its intensive form:

$$y = f(k) \quad \text{...} \quad (1.4)$$

The model further assumes that a constant amount of output is saved, s, and invested.

With this assumption, the change in k which is the increase of physical capital at a point in time (total investment minus depreciation) is:

$$\dot{k} = I - \delta K = s.F(K,L,t) - \delta K \quad \text{.....................................} \quad (1.5)$$

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[6] The production function is said to be neoclassical if it satisfies three properties-: exhibits positive and diminishing marginal products with respect to each input, exhibits constant returns to scale and if the marginal product of capital (or labour) approaches infinity as capital (or labour) goes to 0 and approaches 0 as capital (or labour) goes to infinity (Inada conditions). See Barro and Sala-I-Martin (1995).

Dividing both sides of the equation gives:

$$\frac{\dot{K}}{L} = s.f(k) - \delta k \quad \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots \text{(1.6)}$$

In equation (1.6), the right hand side contains per capita variables but not the left hand side. We can write per capita form of $\dot{K} \div L$, by using the condition:

$$\dot{k} \equiv \frac{\partial \left(\dfrac{K}{L}\right)}{\partial t} = \frac{\dot{K}}{L} - nk,$$

where $n = \dfrac{\dot{L}}{L}$. Substituting this result into the expression for $\dfrac{\dot{K}}{L}$ (equation 1.6), the terms can be rearranged to per capita terms:

$$\dot{k} = s.f(k) - (n+\delta)k \quad \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots \text{(1.7)}$$

The steady state in the Solow model is defined as a situation in which the various quantities (savings, population, GDP) grow at constant rates. This state corresponds to $\dot{k} = 0$ in equation (1.7), that is, to an intersection of the $s \cdot f(k)$ curve with $(n+\delta).k$ line in figure 2.0. k* algebraically satisfies the condition:

$$s.f(k^*) = (n+\delta)k^* \quad \dots\dots\dots\dots\dots\dots\dots \text{(1.9)}$$

Since k is constant in the steady state, all other variables are constant at the values $y^* = f(k^*)$ and $c^* = (1-s).f(k^*)$ respectively. This means that in the model, the per capita quantities k, y and c do not grow in the steady state. In figure 2.1, changes, in the level of any of the quantities, have effects on the per capita levels of the various quantities in the steady state. For example, a proportional upward shift of the production function or an increase from $s_1 f(k)$ to $s_2 f(k)$ curve leads to an increase in $k_0 *$ to $k_2 *$ An increase in n or δ moves the $(n+\delta)k_1$ line upward and leads to a decrease in $k_0 *$ to $k_1 *$.

It is important to note that changes in the level of technology, population growth, depreciation and savings rates do not change the steady-state growth rates of per capita GDP. This is why the model, as specified above, will not provide an explanation for determinants of long-run per capita growth (Barro and Sala-I-Martin, 1995:22). The long run growth rates of per capita

GDP in the Solow model are exclusively determined by exogenous variables. It is the model's implication about *transitional dynamics* which shows how a country's per capita GDP converges toward its own steady-state level, and to the per capita GDPs of other countries, that provides an explanation of determinants of long run per capita GDP growth rates. Dividing both sides of equation (1.7) by k gives the growth rate of k as:

$$\lambda k \equiv \frac{\dot{k}}{k} = s.f(k)/k - (n + \delta)$$ .... (1.9)

Equation 1.9 indicates that the growth rate of per capita equals the difference between two variables: saving $(s.f(k)/k)$ and population growth rate plus depreciation $(n + \delta)$. This is illustrated in the figure below:
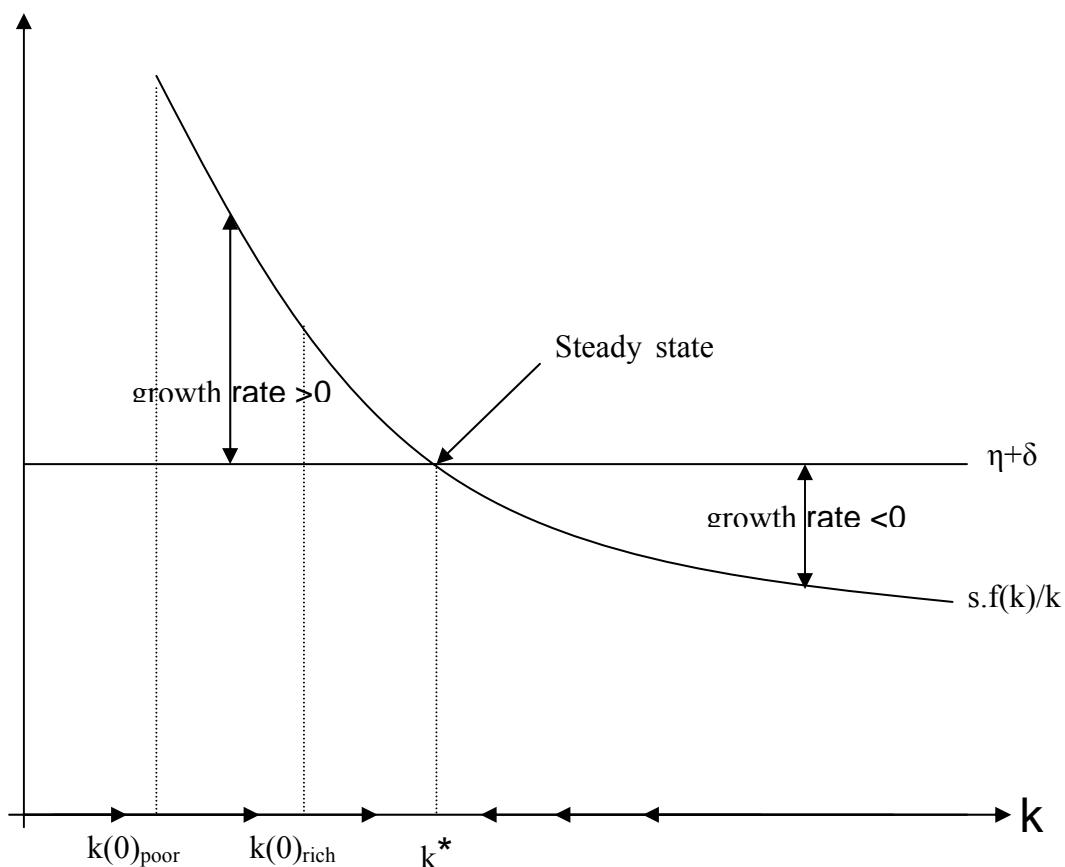
Figure 2.0 Dynamics of the Solow-Swan Model
Source: Barro and Sala-i-Martin (1995: 23).

k* indicates the steady state of the economy. The growth rate is the vertical distance between the saving curve and the effective depreciation line. The figure shows that, on the left hand side, savings are higher than the depreciation rate and population growth rate and the growth

rate of per capita is positive. Conversely, on the right hand side, where population growth and depreciation rates are higher than replicable physical capital (savings), per capita GDP growth falls. In summary, growth in the Solow model loses momentum if capital is growing faster in relation to labour growth, which is exactly what is happening to the left of k* in figure 2.0. The reason is diminishing returns to capital, which creates a downward movement in the capital (savings in this figure) output ratio as capital is accumulated faster than labour (Ray 1998: 67). We can also observe that the growth rate increases and approaches 0 as k approaches k* meaning for any initial value, k(0), the country converges to its unique steady state, K*. This brings me to one of the fundamental strings in explaining economic growth differences among countries attached to the Solow growth model.

2.2.3   Implication of the Solow Growth Model

The Solow growth model has several implications for the growth of the economy, which mainly includes,

- that a high saving rate will affect growth in per capita GDP positively[7]; this is seen by looking at figure 2.1, an increase in the savings rate from $s_1 f(k)$ and $s_2 f(k)$ will increase output and steady state will move from k_0 to k_2;

- that a high population growth (corrected by the rate of technological progress and the rate of depreciation) will have a negative effect on growth in per capita GDP;

- investment is balancing out loss of capital stock (which occurs as a result of depreciation) and it also needs to provide capital to new workers.

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[7] This is only a temporary effect.
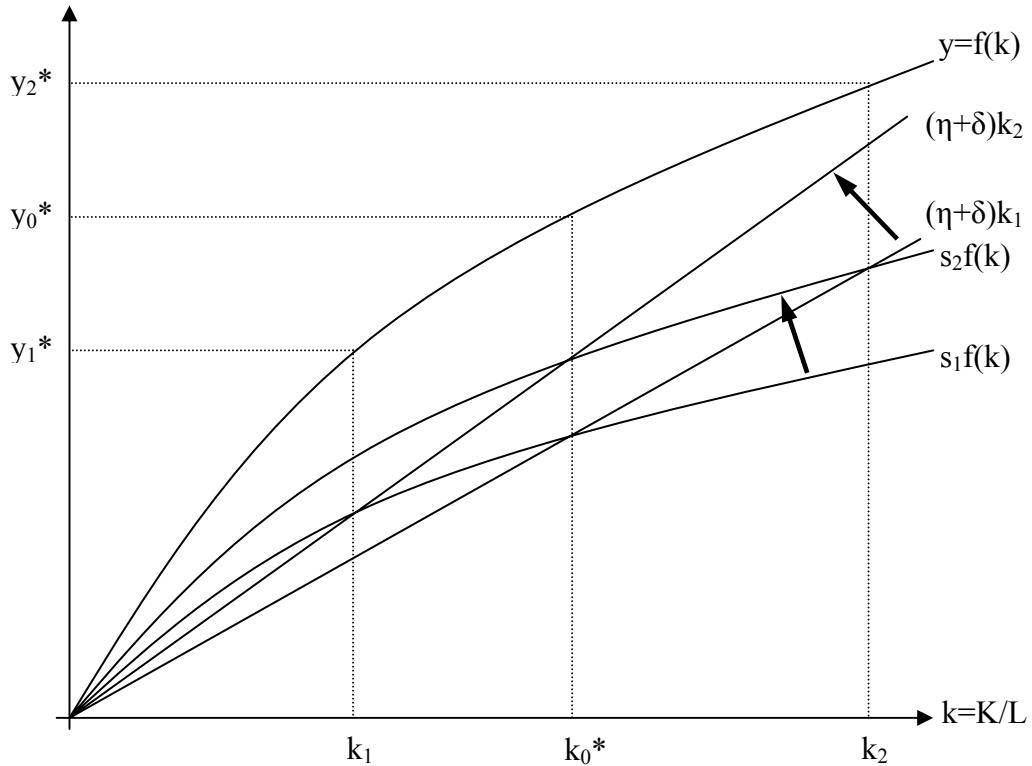
Figure 2.1 implication of the Solow growth model

In conclusion, the Solow model (both with, and without, technical progress) have the following main predictions:

1. For countries with the same steady-states (i.e. n, s, δ), poor countries should grow faster than rich ones (the convergence hypothesis).

2. Differences in per capita GDP across the world would be large, due to differences in savings, population growth and technological progress.

3. An increase in investment raises the growth rate temporarily as the economy moves to a new steady-state. But once the new higher steady-state level of GDP is reached, the growth rate returns to its previous level.

One feature of the implication of the Solow model, which has been exploited seriously as an empirical hypothesis only in recent years, is the convergence property. I should touch upon the *convergence* hypothesis of the Solow model, given that it has generated much empirical speculation in recent years and will probably spawn more in years to come. There are two versions of this hypothesis, the absolute and the conditional convergence. The former hypothesis posits that taking the case of a group of countries (say in an isolated region) with similar structure in terms of having the same savings rate, same population growth rate and

depreciation rate $(n, s$ and $\delta)$ and have the same production function (meaning they have the same steady state values k* and y*) these countries will converge to the same steady state. Assuming that the only difference among such countries is the initial amount of capital available per person[8], the model implies that the poorer countries with lower values of initial GDP have higher growth rates of capital, and that the growth rate of output will be typically high for the poor countries and the reverse would be true for the rich countries. In the end, both types of economies (rich and poor), based on the assumption of homogeneity of the economies, will converge to the same steady state of k_0 * in figure 2.2. The hypothesis that poor economies tend to grow faster per capita than rich ones (without any conditioning on the characteristics of the respective countries' economy) is referred to as absolute convergence illustrated in figure 2.2.
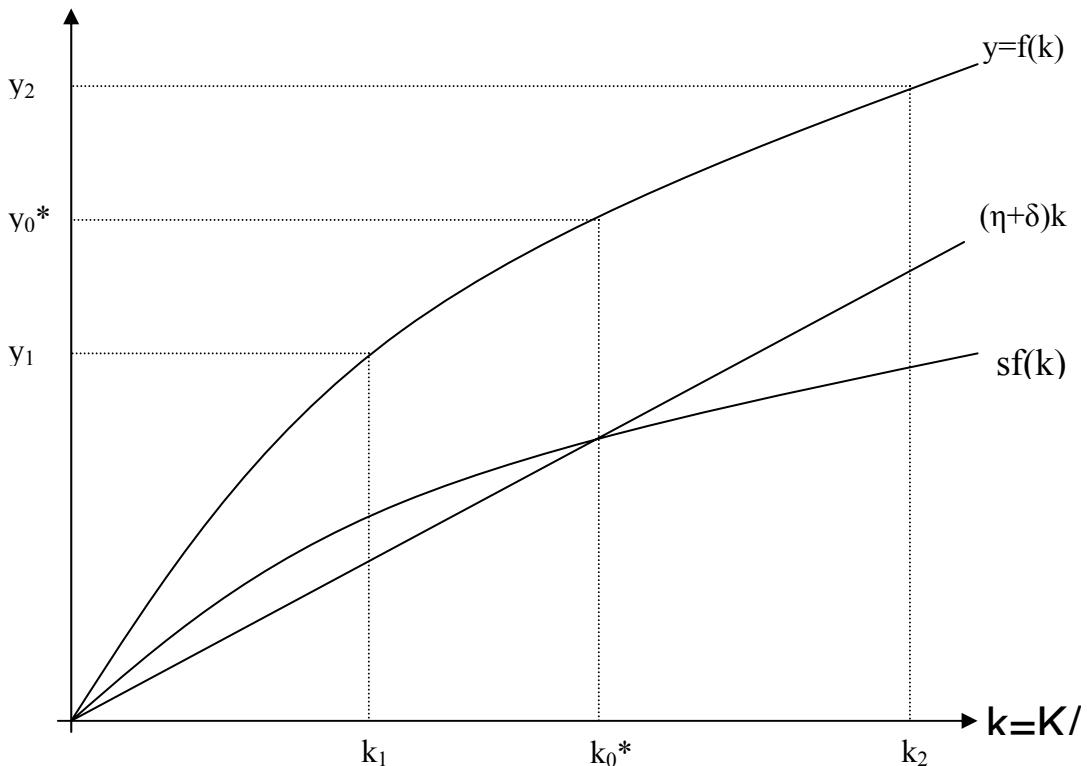
Figure 2.2- Absolute convergence

Absolute convergence, as depicted in figure 2.2, assumes that k_1 represents the capital-labour ratio of poor countries and k_2 the capital-labour ratio of a rich country and both types of economies have the same steady state level of k*. This sounds implausible because nations in

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[8] Let us bear in mind for a moment that the differences in initial capital available to citizens of these assumed countries could be as a result of past disturbances to the economy, especially conflict.

the world are far from being similar to one another in terms of population growth rate, savings and the rate of technological advancement. Consequently, absolute convergence is bound not to hold[9]. As a result, the conditional convergence hypothesis receives more attention in growth model analysis. As also noted by Barro (1997), the neoclassical model's central idea of conditional convergence receives strong support from the data. By allowing heterogeneity across countries (which is the case any way), meaning that countries are no longer assumed to have the same growth parameters (savings, population and depreciation rate) hence different steady states, the model predicts what is known as conditional convergence.

The conditional convergence hypothesis assumes that countries can have different steady-state ratios, savings rates and population growth rates, which is a more plausible assumption to make. The model, thus, predicts that each economy converges to its own steady state and the speed of this convergence relates inversely to the distance from the steady state (Barro and Sala-I-Martin 1995, 29). In summary, the Solow model predicts conditional convergence in the sense that controlling for the determinants of growth (population and savings rate which is allowed to differ across countries) a lower starting level of real per capita GDP is likely to lead to a higher per capita GDP growth rate. This means that poorer countries will grow faster to their own steady states since their low per capita GDP status implies a farther distance from their steady states.

The idea of convergence is intrinsically related to the notion of diminishing marginal productivity of capital. Conditional convergence is based on the idea that a poor country has a higher marginal return to capital and, therefore, exhibits a higher rate of per capital growth (Ray 1998). From intuition and experience, drawing on past empirical studies, the conditional convergence hypothesis does hold for most countries in the world, especially when one is comparing countries within the same region.

The convergence hypothesis holds better when growth-enhancing variables are controlled for in explaining per capita GDP growth differences among countries in similar regions in empirical studies. Empirically, we look at the relationship between the per capita GDP growth rate and the starting level of per capita GDP, after controlling for fixed variables (population

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[9] However, the hypothesis of absolute convergence fares better when a more homogenous group of countries (OECD countries for example), or regions within a country (States in the USA for example) are examined.

growth rate, physical capital, human capital, and, in this study, conflict and refugees) that account for differences in the steady state position of GDP. This is the fundamental motivation behind the use of the Solow model as a framework for this study. The empirical part of the model observes differences in growth rate of per capita GDP in developing countries in transition to their steady states. This is using data to explain the growth rate of per capita GDP differences (on the left hand side of figure 2.0 moving towards k*) among countries in the developing regions. The analyses are, hence, hinged on transition to the steady state since, in this state; growth enhancing parameters are allowed to vary among countries.

The neoclassical Solow framework has been the workhorse for empirical analysis of growth in industrial and developing countries. However, the selection of a framework is largely influenced by the researcher's aim or what she intends to investigate. Interest in searching for evidence to confirm or reject the convergence theory, makes both the single regression model and the panel data models (fixed and random effects models) used in this study, to have their theoretical basis in the Solow growth model. However, to expect to understand an incredibly complicated economic universe from a single theory (or even a set of theories) would be naïve. As it turns out, though, theories of economic growth take us quite far in understanding the development process, at least at the aggregate level. This is especially so if we supplement theories with what we know empirically (Ray, 1999), as most empirical analysts do. I will follow this strategy in investigating the effects of refugees and conflict in developing countries. First, however, let me state the empirical version of the theoretical Solow model in the next section.

2.3 THE AUGMENTED SOLOW MODEL

For empirical tests of the Solow model, the regression includes, in addition to the savings rate and population growth, several other regressors. In the augmented version of the Solow model, investment in capital (human as well as physical) is an additional determinant of growth in GDP. Most empirical studies are based on more general models and include a range of other socio-economic variables. Following similar specification as in MRW (1992), but more especially as in Murdoch and Sandler (2002a), the empirical model that is estimated then becomes:

$$Y(t) = K(t)^{\alpha} H(t)^{\beta} \left[\left(A(t)L(t) \right) \right]^{1-\alpha-\beta} \quad \dots\dots\dots\dots\dots\dots\dots\dots \text{(2.0)}$$

where $\alpha, \beta \in [0,1], \alpha + \beta [0,1]$ and t denotes time

α and β are the elasticities of output with respect to physical and human capital, respectively. In equation (2.0), A_t denotes labour-embodied technical change, while 1-a-b represents the output of elasticity of effective units of labour, A(t)L(t). Labour grows at the exogenous natural rate of n, while technology grows at the exogenous rate of g. This implies that the production function exhibits constant returns to scale in its three factors[10] -- physical capital (K), human capital (H), and productivity augmented labour (AL) -- but declining returns to each factor of production. All markets (both input and output markets) are assumed to be perfectly competitive.

Note that the terms in equations 2.0 describe aggregate output and aggregate input and not per capita terms. To change this to the latter[11], given the assumption of constant returns to scale, we can divide both sides of equation 2.0 by effective labour and express GDP per capita $(y = Y / AL)$ as:

$$y(t) = k(t)^a h(t)^b \text{ ………………………………………….. (2.1)}$$

with k = K/AL and h= H/AL

To complete the model, I need the transition equations for physical and human capital. Both forms are assumed to depreciate at the same rate of δ for the sake of simplicity. Each transition equation follows from either expressing the time rate of change of capital $(\dot{H} = dK/dt)$ or human capital $(\dot{H} = dH/dT)$ in effective labour units as the difference between the share of GDP devoted to K or H less depreciation. Based on standard substitution, the transition equations are:

$$\dot{k}(t) = s_k y(t) - (n + g + \delta)k(t) \text{ ……………. (2.2)}$$

and

$$\dot{h}(t) = s_h y(t) - (n + g + \delta)h(t) \text{ …………… (2.3)}$$

where s_k and s_h are the shares of GDP invested in physical and human capital. The steady state is characterised by $\dot{k} = \dot{h} = 0$, and the steady state levels of physical capital and human capital are:

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[10] That is, the same proportional change in the three inputs results in the same proportional change in output.
[11] Changing the equation into per capita terms is necessary since the equation to be estimated is in per capita terms.

$$k^* = \left(\frac{s_k^{\alpha} s_h^{1-\alpha}}{n + g + \delta} \right)^{1/(1-\alpha-\beta)} \quad \text{....................... (2.4)}$$

and

$$h^* = \left(\frac{s_k^{\alpha} s_h^{1-\alpha}}{n + g + \delta} \right)^{1/(1-\alpha-\beta)} \quad \text{....................... (2.5)}$$

At this point, the steady state values for k and h can be substituted into the production function expressed as

$$\frac{Y(t)}{L(t)} = A(t)k^{\alpha}h^{\beta} \quad \text{.............. (2.6)}$$

By taking logs of equation (2.6) we obtain the steady state per capita GDP estimates:

$$\ln \frac{Y(t)}{L(t)} = c + gt + \frac{\alpha}{1-\varepsilon-\beta}\ln s_k - \frac{\alpha+\beta}{1-\alpha-\beta}\ln(n + g + \delta), \text{......... (2.7)}$$

In equation (2.7), A (0) is set to a constant, c. Also, in this equation, the share of GDP invested in physical and human capital have a positive influence on steady-state per capita real GDP, where as growth of labour, n, depreciation, labour embodied technical change affects steady state per capita GDP inversely.

2.3.2 Relevance of the Augmented Solow model for this study.

The augmented Solow model has been identified as the framework for this study. This model is extended to allow migration. A special kind of migration that is prevalent in developing countries, namely, forced migration, and a special group of these forced migrants, in other words, refugees, who are presumed to have crossed an international border.

Refugee migration may affect per capita GDP in this model in two ways. First, if migrants bring human capital, s_h in the host country increases and GDP per capita subsequently increases. Murdoch and Sandler (2002) assumed that in a civil war scenario, refugees typically bring little usable human capital and they ignored this potential influence on per capita GDP of host countries. Although this study can also not account for the human capital brought in by refugees, I however, disagree that human capital of refugees is negligible. Most often, the affluent in developing countries, who are significantly more educated members in the population, can quickly leave the country that is in conflict since they are usually in a

better position to afford the cost of international migration. But modelling the human capital of refugees is difficult since disaggregated data on refugee demographics is unavailable. In addition, the fact that refugees to a destination country can come from different source countries makes the home country human capital level, which could be used as a proxy of refugee human capital, difficult to determine. This would have been suitable to include in this study. Again, the assumption that refugees bring in little human capital in Murdoch and Sandler (2002) is tied to taking refugees as civil-war related migrants. There are refugees whose refugee status is not as a result of conflict but other forms of persecution[12]. Refugees in this category are even more likely to bring high levels of human capital.

However, refugees' influence on per capita GDP growth in host countries increases the population of the country. This can be incorporated in equation 2.7 by stating the population term, n as $m + n$, where the extension, m is the growth in refugee migration[13]. In equation (2.7), $\ln(m + n + g + \delta)$ can then replace $\ln(n + m + \delta)$. The term with m indicates that migration can further serve to decrease steady state GDP per capita. And where the s_h of refugees was known, this could serve to increase the growth rate of per capita GDP. As a result, the effect of refugees on per capita GDP growth rate in developing countries is difficult to predict since it could be positive, if we account for refugees' human capital and negative by increasing population growth rate.

A further attraction to the Solow growth model is its emphasis on the influence of population growth on economic growth. This is so because this study seeks to establish that, in addition to natural factors that lead to population increase, refugee flow is another very important factor that increases population especially in developing countries. Therefore, while making reference to this model, emphasis will be laid on the effect of population growth on the economy as influenced by refugee flow.

We can also think of refugees in increasing the physical capital stock of the host country either by attracting international aid which could be invested physically, since refugee areas are normally provided with building materials, schools, water pumps, etc., but also that the

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[12] An example is gender based persecution for example, such as evidenced in the case of women who flee their countries for fear of female genital mutilation.
[13] Murdoch and Sandler (2002) used the civil war measure as a proxy for migration.

refugees themselves might increase physical capital by bringing financial capital which could be converted into physical capital. These are all ways by which refugees could positively affect per capita GDP growth in host countries.

Before talking about the use of the model in establishing the effect of conflict on per capita GDP growth, it is convenient to express the estimating equation as a growth rate which examines the transition to steady state rather than observing steady state itself. The difference between GDP per capita at two points in time (growth rate) is denoted by $y(t)$ and $y(0)$, where t is the end period selected and (0) some initial value. Assuming that the speed of convergence to the steady-state GDP per capita value of $y*$, from an actual value of $y(t)$ at time t, is λ, the growth in GDP per capita from the assumed initial value is:

$$\ln y(t) - \ln y(0) = \left(1 - e^{-\lambda t}\right)\ln y* - \left(1 - e^{-\lambda t}\right)\ln y(0) \ldots\ldots\ldots\ldots\ldots (2.8)$$

Equation 2.8 represents a log-linearised approximation for the *transition* of per capita GDP to its steady state value. It is at this transition when the parameters change to influence per capita GDP and this lies at the centre of this study which investigates the effects of refugees and the prevalence of conflict on the transition to steady states of countries in the developing world. Substituting $y*$ using equation 2.7, we get:

$$\ln y(t) - \ln y(0) = c + \left(1 - e^{-\lambda t}\right)\frac{\alpha}{1-\alpha-\beta}\ln s_k + \left(1 - e^{-\lambda t}\right)\frac{\beta}{1-\alpha-\beta}\ln s_h$$
$$- \left(1 - e^{-\lambda t}\right)\frac{\alpha+\beta}{1-\alpha-\beta}\ln(n+g+\delta) - \left(1 - e^{-\lambda t}\right)\ln y(0) \qquad \ldots\ldots (2.9)$$

There is a great difference between equation 2.7 and 2.9. The former estimates for steady state level of GDP per capita[14] and the latter estimates for the growth of GDP per capita. Both equations are also different by the appearance of the initial GDP per capita term in the latter equation. This initial GDP per capita takes a negative influence on growth as a result of the assumption of diminishing returns, and, it is thus, responsible for convergence which predicts that the growth rate of poorer countries will be higher than that of rich countries.

The argument of the initial GDP per capita's negative effect on subsequent per capita growth evokes several theoretical reasons why conflict may adversely influence the growth of a country's GDP per capita. Conflict at home may lead to the loss of physical and human capital, divert foreign direct investment, increase military expenditure, disrupt economic

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[14] This is what MRW (1992) did by using the level of GDP per capita.

activities, etc.,[15] all of which, along with several other factors, may reduce GDP per capita and its growth rate. However, the reduction of GDP per capita as a result of conflict (and several other reasons) is observed in this study by taking the lag of conflict variable a year before the initial value of per capita GDP (1990). This means that the per capita GDP of 1990 might have been reduced by conflict of 1989. It is expected that a stronger case of convergence will show up since conflict in previous years is likely to have reduced per capita GDP, and, a lower per capita GDP indicates faster per capita GDP growth. Convergence is also an essential consideration for investigating the influence of a conflict. When a conflict subsides, a country will be starting at a relatively low GDP per capita, where catch-up through convergence is an important factor to look for (Murdoch and Sandler 2002b). Though this study does not intentionally extend to the years after conflict, most of the observations (countries) are either newly emerging from conflict or their per capita GDP is being reduced by ongoing conflict.

However, it is now also important to look at the empirical specification of the Augmented Solow model for this study.

2.4   EMPIRICAL MODEL SPECIFICATION

To study the effects of conflict and refugee flow in developing countries, I examine a set of specifications based on the 'long-term growth' in per capita GDP as shown in equation (2.9) as well as the short term growth. This model, as was already stated, addresses the transition to the steady state from an initial level unlike MRW (1992) who investigated the steady state level of GDP per capita[16] (equation 2.7). The transitional dynamics of the Solow model have been widely used in the literature to test for the GDP per capita convergence. This equation will be employed in this study, as it has been similarly used for several empirical analyses, especially Islam (1995), Caselli, Esquivel and Lefort (1996), Hoeffler (2000) and many others.

When we need estimates of parameters, for prediction or policy analysis, there is no good alternative to specification and estimation of a model (Solow, 1988). For the discussion of the

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[15] A detailed theoretical discussion on the effects of conflict on home country economy is provided in the next chapter.
[16] Murdoch and Sandler (2002a) also studied the effects of conflict on the steady state level of GDP per capita in a neoclassical model, in addition to looking at the transitional dynamics of the model.

(augmented) Solow model, or more general models, I will concentrate here on the specification with my key socio-economic variables. Different specifications will be used to test for the robustness of results but each will include this fundamental specification. Hence, in terms of the data and variables, the statistical model for equation (2.9) is:

$$y = \alpha + \beta_1 x_1 + \beta_2 \chi_2 + \beta_3 \chi_3 + \beta_4 \chi_4 + \beta_5 \chi_5 + \varepsilon \dots\dots\dots\dots\dots\dots \text{ (3.0)}$$

Where:

y = GDP per capital averaged over 1990-2000

χ_1 = Initial (1990) GDP per capita

χ_2 = Population growth rate

χ_3 = Gross capital formation (physical capital)

χ_4 = Percentage of refugees hosted.

χ_5 = Prevalence of conflict

ε = error term

α, β_i = parameters to be estimated

This specification includes key variables in the Solow model – population growth rate and investment. The initial GDP per capita is used for investigating the convergence (or divergence, as the case may be) hypothesis, the percentage of refugees hosted by a country (the new variable, at best, to my knowledge in growth regressions) and conflict are the key variables introduced in the traditional Solow growth model. To this benchmark specification other socio-economic variables are gradually added in subsequent estimation equations. There is also a particular specification with human capital variables representing the augmented Solow model.

The study uses the single cross section regression estimated by Ordinary Least Squares. In addition, and for reliability of results, the panel data set is also estimated with two methods: the fixed effects model and the random effects. I will now discuss the single cross section which investigates the long term growth in GDP per capita with the Augmented Solow model extended to include refugee flow and prevalence of conflict.

2.5   SINGLE CROSS-SECTION REGRESSION

There have been many studies on the empirics of long run economic growth in a cross section of regression framework since the preponderance of growth models/theory (see growth literature reviewed in chapter 3). Most of these studies[17] have used average data for long periods of 20 to 30 years. An average over a decade (1990 to 2000) is applied in the current study. According to the leading development textbook of Debraj (1999), the systematic collection of data in the developing economies started only recently, and it is hard to find examples of reliable data that stretch back a century or more. There are, then, two choices: either cover a small number of countries over a large period of time or cover a large number of countries over a short period of time. The latter option fits my analysis best, being that reliable data on one of the key variables (refugee flow) is recorded for the 1990s[18]. For the single cross section, the analysis is based on a regression of the following form:

$$ Y_i = \alpha + \beta y_i + \lambda \chi_i + u_i $$

Where:

Y_i denotes the growth rate of GDP per capita averaged over a 10 year period[19].

y_i is the initial level of real GDP per capita

u_i represents an error term

χ_i independent variables: population growth, gross capital formation and some
    Socio-economic factors: refugees, conflict, etc.
i = 1,….,N denotes a country index

There are several advantages for using the single cross section method. It makes results comparable with previous studies, which might have possibly used this method and averaging data over a period, reduces the possibility of throwing out observations because of missing data problem. Most important is that the effect of some variables on per capita GDP growth can better be observed in the long run rather than the short run. Such variables notably include investment in human capital and physical capital.

However, analyses in this study are not limited to the use of single cross section regressions for the analysis of the Solow model for a number of reasons. First, reducing the time series to

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[17] Among the many studies using the framework are, Mankiw, Roemer and Weil (1992), Levine and Renelt (1992), Barro 1991), Sala-I-Martin (1997), Barro and Sala-I-Martin (1995), and Hoeffler (2000).
[18] See chapter 4 for my discussion of the reliability of refugee data.
[19] See calculation in chapter 4.

a single (average) observation means that not all available information is used, and so the short term dynamics of the growth process will not be analyzed. Second, it is very likely that single cross-section regressions suffer from omitted variable bias. Third, one or more of the regressors may be endogenous. Since single cross-section growth regressions potentially suffer from these problems the panel data approach is used to complement the former method. This is also because the panel data model allows one to be able to account for unobserved country specific effects and allow for the endogeneity of one or more of the regressors provided. This is important since the unobserved country specific effects are likely to be correlated with some of the observed regressors and, in particular, any permanent unobserved influences will necessarily be correlated with the initial GDP per capita.

Because of these, and many other reasons, the study further uses the panel data set, in addition to the single cross section method, to investigate the effects of conflict and refugees on developing countries. Therefore, the second model is a panel version; instead of growth over the long run, I consider two shorter periods of time and then pool them with a panel estimator of fixed and random effects. The process is further explained in the section that follows.

2.6 THE PANEL DATA ANALYSIS

Some previous analyses, such as Barro (1991), used a cross sectional framework, that is, the growth rate and the explanatory variables were observed only once per country. This study follows Barro and many others, but in addition, panel data analysis are also carried out. One of the main reasons this study extends to a panel setup is to expand the sample information. Even if we expect to get the main evidence from variation in the single cross section, panel data dimension can provide additional information. This is particularly useful for variables that have varied considerably over time within countries, especially for the refugee variable so that the short term effects could be directly observed[20].

It is clear that the alternative to the single cross-section method is to exploit the time series data for each country and to consider repeated observations for shorter periods, instead of averaging over the entire period of 10 years or more. This provides a panel data set for the study of economic growth. In a panel data model we can, then, explicitly account for

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[20] Refugee populations in developing countries are very likely to fluctuate since the reasons for their flight (most often conflict) may go on intermittently and refugees may move back and forth to the host country.

permanent unobserved country specific effects, α_i. This provides a panel data model of the form[21]:

$$Y_{it} = \chi'_{it}\beta + U_{it}$$
$$= \chi'_{it}\beta + \alpha_i + \varepsilon_{it}$$
$$= \alpha_i + \chi'_{it}\beta + \varepsilon_{it}$$

where:

Countries: $i = 1,....n$

Time: $t = 1,......T$ (for the purpose of this study time periods is in years) and

$$\chi'_{it} = \left(\chi_{it1}, \chi_{it2}\cdots\chi_{itk}\right)$$

NOTE:

$"i"$ indicates that a variable may vary over individuals, $"t"$ indicates that it may vary over time.

Y_{it} : endogenous variable of individual 'i' in time period 't'

χ'_{it} : is the vector of K regressors of individual 'i' in time period 't' being measured either at the beginning of each period, or as an average over each of the five year periods[22].

U_{it} is the error term of individual 'i' in time period 't' and is composed of two terms: a random component that varies over individuals and time $\left(\varepsilon_{it}\right)$, and an unknown individual-specific constant referred to as fixed effect $\left(\alpha_i\right)$. This fixed-effect, as the name implies, does not change over time.

β : is the unknown parameter vector of the regressors.

The fixed effects are estimated by the 'within group estimator' method which is the differencing out method which involves taking the first difference between two time periods. In the simplest case we have a panel of two waves (1990-1995 and 1996-2000); that T = 2.

$$y_{i1} = \alpha_i + \chi'_{i1}\beta + \varepsilon_{i1}$$
$$y_{i2} = \alpha_i + \chi'_{i2}\beta + \varepsilon_{i2}$$

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[21] See Wooldridge (2000) and Greene (2003).
[22] I have two waves in my panel data set. I try alternatively, the initial value and the average value of a variable, and select the one that is econometrically plausible.

Taking the first difference between two time periods leads to:

$$y_{i2} - y_{i1} = \left(\chi'_{i2} - \chi'_{i1}\right)' \beta + \varepsilon_{i2} - \varepsilon_{i1}$$

$$\Delta y_i = \Delta \chi' \beta + \Delta \varepsilon_i \ \text{.......the transformed model}$$

$$\text{cov}(\Delta \chi, \Delta \varepsilon) = 0$$

Countries: i = 1,…72 and time period 1990-195 and 1996-2000.

This is the fixed effect model; for this method the model is transformed by subtracting out the time series means of each variable for each country. In this transformation process, the country specific effects are eliminated, because the country specific effects, αi, are invariant over time. In this formulation we have completely eliminated the individual specific effects. If we regress the first difference of the Δy on the first difference of the regressors $\Delta \chi$, we get an unbiased estimate of β. The reason is that there is no correlation between $\text{cov}(\Delta \chi, \Delta \varepsilon) = 0$. The transformed model is then estimated by OLS. This specification is only for cases with two waves. In cases where there are more than two waves, we may restate the model in terms of deviations from individual (group) means[23]. It is also important to state the assumptions about the error term and the fixed effects in this model:

$$E(\varepsilon_{it}) = 0$$
$$V(\varepsilon_{it} = \sigma_\varepsilon^2)$$
$$\text{cov}(\varepsilon_{it}, \varepsilon_{jt}) = 0$$
$$\text{cov}(\varepsilon_{it}, \varepsilon_{is}) = 0$$
$$\text{cov}(\varepsilon_{it}, \underline{\chi}_{it}) = \underline{0}$$

The basic feature of the fixed effect model is that it allows the error term u, to be correlated with any regressor and it takes account of the unobserved country specific effects which distinguishes it from the simple regression models for cross-sectional data. This is further observed by looking at the assumptions of the model. There is no assumption about the covariance between the fixed effects and any regressor $\text{cov}(\alpha_i, \chi_{kit})$. This means that the model allows that the error term u may be correlated with any regressor which distinguishes it from the simple regression models for cross-sectional data. If the assumption about the

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[23] See the fixed effect model with T>2 in the appendix to this chapter.

error term and regressors is true, using OLS will lead to biased parameter estimates hence the choice for the selection of alternative estimation technique. However, there is a major disadvantage of the fixed effect estimator: we cannot estimate effects of observable regressors on y that are constant over time. For example, variables like a country being landlocked, or not, and so forth, cannot be estimated with the fixed effect model since it does not vary over time.

Conversely, the random effect model is estimated with the General Least Squares Estimator. In the fixed effects model, differences between countries are interpreted as parametric shifts of the intercept in the regression models. This interpretation is appropriate if the countries of my sample make up for a large number of available countries. Then I can reasonably assume that the country specific effects are constants and not random draws from a large population. This assumption depends significantly on the total number of countries one wishes to include in the study. If the current study was only limited to sub-Saharan Africa, it could be assumed that the 40 out of 47 countries included this study make up for a large number of the countries in this region. However, the study includes countries in the developing world, in which 72 of these countries might make up for a relatively small share of the total countries in the developing regions. In this case, one may interpret country specific effects rather as random draws from the population. Defining my country specific effect as a random variable with a constant expectation α and a country specific error term u_i the random effect model is obtained:

$$\alpha_i = \alpha + u_i, E(u_i) = 0$$

The regression model can then be written in a slightly different way as:

$$y_{it} = \alpha + \chi'_{it}\beta + u_i + \varepsilon_{it}$$

countries: $i = 1,...n$ and time: $t = 1,..T$

In the formulation above, the first element of the $\underline{\chi}_{it}$ is not a 1 and $\underline{\beta}$, hence it contains no constant. We could however, rewrite the model such that $\underline{\beta}$ contains a constant. We then simply have:

$$y_{it} = \underline{\chi}'_{it}\underline{\beta} + \underbrace{u_i + \varepsilon_{it}}_{w_{it}}$$

In this case, we end up with two error terms for which the following assumptions are made:

$$E(u_i) = E(\varepsilon_{it}) = 0,$$
$$V(\varepsilon_{it}) = \sigma_\varepsilon^2,$$
$$V(u_i) = \sigma_u^2$$
$$cov(\varepsilon_{it}, u_j) = 0 \text{ for all I, t and j}$$
$$cov(\varepsilon_{it}, \varepsilon_{js}) = 0 \text{ if } t \neq s \text{ or } i \neq j$$
$$cov(u_i, u_j) = 0 \text{ if } i \neq j$$
$$cov(u_i, \underline{\chi}_{it}) = cov(\varepsilon_{it}, \underline{\chi}_{it}) = 0$$

We can write the error term of a country in period t as $w_{it} = u_{it} + \varepsilon_{it}$

There is a very important point to note about the assumptions of the random effect model. The basic assumption of this model, in contrast to the fixed effect, is that the error terms are not correlated with regressors (Wooldridge 2000 and Greene, 2003). This means that in the random effect model, the error terms need to be homoscadastic and there should be no correlation of the error terms over time (autocorrelation). Since this is most often not the case, applying OLS could lead to inefficient estimates of the parameters so the GLS method is used to estimate efficient parameters of the random model. This further means that we transform the model into one where the transformation will be as follows:

$$P = V^{-0.5}$$
$$\underline{y} = X\underline{\beta} + \underline{w}|.P \text{ from the left}$$
$$P\underline{y} = PX\underline{\beta} + P\underline{w}$$
$$\underline{y}* = X*\underline{\beta} + \underline{w}* \text{ transformed model}$$
$$V(\omega*) = E[\underline{w}*\underline{w}*] = E[P\underline{w}\underline{w}'P] = PE[\underline{w}\underline{w}']P$$
$$= V^{-0.5}VV^{-0.5} = I_{nT \times nT}$$

Now at this point, the study runs regressions using the transformed model and obtains GLS estimator for $\underline{\beta}$.

The fundamental problem in estimating both the fixed effects and the random effects model is that the choice between the results of the two models that should be interpreted. The reason is that RE is more efficient than FE since it models the many intercepts as two stochastic terms following normal distributions with zero means. However, RE can introduce bias and

inconsistency into the estimates if the characteristics being modelled by α and β are correlated with any of the independent variables. However, all else being equal, it is expected that both the FE and the RE will produce the same results. If FE and RE have the same parameter, estimates results of the RE will be preferred since it takes heteroskadasticity into account. In essence, the judgments on the preferred model can only be made based on results of the Hausman test which goes as follows:

H_0 :   random effects

H_A: fixed effects

Hausman Test-Statistic:

$$\chi^2 = \left[\hat{\underline{\beta}}_{fe} - \hat{\underline{\beta}}_{re}\right]\left[V\left(\hat{\underline{\beta}fe}\right) - V\left(\hat{\underline{\beta}}_{re}\right)\right]^{-1}\left[\hat{\underline{\beta}}_{fe} - \hat{\underline{\beta}}_{re}\right]$$

Reject H_o if this statistic exceeds the critical values.

The χ^2 under the null hypothesis, is asymptotically distributed as χ_k^2, where k stands for the number of degrees of freedom.

Basically, the dataset used to estimate the single cross section is the same as for the panel data. The distinguishing feature of the latter is that the dataset is divided into two time periods (1990 to 1995) and (1996 to 2000), meaning that averages are no longer over the decade, but over the respective five year period with initial periods being 1990 and 1996 respectively.

Some of the variables might, however, be different in form. There are a number of reasons to believe that some of the regressors in empirical growth models, e.g., investment, may not be strictly exogenous.

Further, GDP per capita growth might be correlated with current investment. So investment in this study is lagged for one period since it is less likely to be correlated or determined by current GDP per capita growth. Hence, the investment variable for the first wave (1990 to 1995) is the average of investment from 1985 to 1990 and for the second wave --1996-2000-- investment variable is the average of 1990 to 1995.

Education variable data collected by Barro and Lee (1996) provide the average years of total schooling for the population aged 25 and older. The data is provided starting in 1960, 1965

and ending in 1999. For this study schooling data at the beginning of each five year period (1990 and 1995) are used for each wave.

All other variables are likely to remain in the same form as they are in the single cross section data, but, of course, divided into the two time period. In some cases, the initial value of the variables is used to avoid the multicollinearity problem.

2.7 CONCLUSION

Chapter two has explained the procedure this study uses in establishing the link between the flow of refugees and the prevalence of conflict in explaining cross country growth differences in developing countries. The chapter starts by giving a brief history on the emergence of today's most widely used growth theory. One of the neoclassical growth models, the Solow model, selected as a framework for the study, is also explained by deriving the theoretical version of this model and providing the empirical counterparts. The feature of the Solow model and its implications for economic growth analyses are also explained. The chapter makes a clear case as to why the Solow model is considered suitable for the study of the effects of conflict and refugees in developing countries. Finally, the chapter deals with the estimation methods using two different forms of data: single cross section and panel data.

In the chapter that follows, a review of relevant literature for different aspects of the study is carried out. This is a necessary step before estimating results since pervious studies might have dealt with similar issues and the review will serve as a guide to the study.

2.8 APPENDIX TO CHAPTER TWO

In the fixed effect model, case where there are more than two waves (T>2), the model is restated in terms of deviations from country (group) means:

$$y_{it} = \alpha_i + \underline{\chi}'_{it}\beta + \varepsilon_{it}$$

Define means of the variables for each individual as:

$$\bar{y}_i = \frac{1}{T}\sum_{t=1}^{T} y_{it}, \bar{\alpha}_i = \alpha_i, \bar{x}_i = \frac{1}{T}\sum_{t=1}^{T}\underline{x}_{it}, \bar{\varepsilon}_i = \frac{1}{T}\sum_{t=1}^{T}\varepsilon_{it}$$

So the model for the group means is

$$\bar{y}_i = \alpha_i + \underline{\bar{x}}'\underline{\beta} + \bar{\varepsilon}_i$$

Subtracting the above expression from the original equation, we have:

$$y_{it} - \bar{y}_i = \left(\underline{x}_{it} - \underline{\bar{x}}_i\right)'\underline{\beta} + \varepsilon_{it} - \bar{\varepsilon}_i \quad \text{or}$$

$$y_{it}* = \underline{x}_{it}*'\underline{\beta} + \varepsilon_{it}* \quad \text{transformed model.}$$

CHAPTER THREE: REVIEW OF LITERATURE

3.0 INTRODUCTION

The preceding chapters deal with the fundamental questions of 'why' and 'how' the research is carried out. Chapter two discussed the research methodology this study uses. It deals with how this study establishes the relationship between economic growth, conflict and refugee flows in developing countries. In this chapter, I wish to draw on the work of previous researchers who have looked at similar issues to lay the foundation for my research.

Several issues have been deliberated in this study which previous studies have also either incorporated elements of, or have dealt with the same subject differently. To prove that the study is not in isolation, and that findings might be similar to previous ones, an attempt is made here to review literature on the empirics of growth. In addition, previous findings on the general effects of hosting refugees are reviewed. The literature on refugees is based mainly on studies which have carried out country surveys and theoretical debates. The review of literature also includes material on the effects of conflict on economic growth. This sub-section reviews both theoretical and empirical literature confirming the negative effect of conflict on economic growth. The literature review of this work will not claim to be exhaustive under any circumstance; instead, an attempt is only made to review relevant studies.

3.1 CROSS COUNTRY GROWTH EMPIRICS: PREVIOUS EVIDENCE

This sub-section reviews literature on the key variables in the growth theory framework that form the basis of this study. Specifically, the section reviews literature confirming or rejecting the convergence hypothesis of the Solow growth model, results of studies on the key variables of this model and comment on few criticisms of growth empirics[1].

The central idea of the dominant neo-classical growth model has widely been commented on in several studies related to the study of economic growth. The first thing to note about the empirical literature on growth is that, although the literature is stimulated by endogenous growth models, it fails to reject the neoclassical growth models. In particular, most published

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[1] The work of Chung (1998), proved very useful in writing this sub-section. Chung provides an overview of most current literature sources of key socio-economic variables used in studies related to empirical growth.

empirical work finds a negative partial correlation between initial GDP and subsequent growth, after controlling for factors that are likely to affect steady-state output per effective labour (Chung, 1998). This is the so-called conditional convergence result which forms the cornerstone on which the popular neo-classical growth model of Solow is built. The work of Mankiw, Romer and Weil (1992) is the most representative and most widely referenced piece of work in this respect. In addition to these authors, the work of Barro (1991) and Barro and Sala-I-Martin (1992) is receiving increasing attention in the literature on the empirics of growth. A host of studies have confirmed the theory of conditional convergence. Barro (1991, 1997), Barro and Lee (1994), Barro and Sala-I-Martin (1992), Caselli, Esquivel and Lefort (1996), Levine and Renelt (1992) and MRW (1992) have all confirmed the statistically significant and negative sign on the initial GDP when growth regressions are estimated.

Very few studies have been known to produce contrasting view on convergence. Starting with the early work of Barro (1991), which shows that cross-country GDP levels are diverging instead of converging, most empirical work has confirmed the well known convergence theory. However, on controlling for other effects, Cho[2] (1996) and Romer[3] (1993) found that, in fact, this initial condition is positively significant on growth suggesting, a rejection of the convergence theory for a more careful interpretation, and the theory seem to be specification sensitive. An even more critical view about the widely accepted conditional convergence theory through data confirmation was posited by Murphy, Shleifer and Vishny (1991). They remarked that it is not clear that it makes sense to define convergence while holding investment constant. To these authors, and a few others, investment is a major mechanism through which low initial GDP leads to higher growth. These relatively new contrasting findings have, however, not created enough impact since the convergence theory is still confirmed by even more recent studies.

The augmented Solow model posits that differences in saving, education, and population growth should explain cross-country differences in GDP per capita. Mankiw, Romer and Wiel's (1992)[4] examination of the data indicates that these three variables do explain most of the international variation in per capita GDP. So, apart from conditional convergence, there

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[2] After correcting for the endogeneity of investment ratio and population growth.
[3] After controlling for an interaction term of investment ratio and initial GDP; the interpretation is that richer countries have lower marginal returns to investment, but also higher ability to take advantage of the ideas available in the rest of the world (Chung ,1998).
[4] Hence forth MRW.

are key variables predicted to have considerable effect on growth in the Solow model. One such key variable is investment, which is said to have strong explanatory power on subsequent growth. The results of most of the authors appear robust but more attention should be given to the possibility of causal[5] direction to avoid the (misleading) consensus that higher investment leads to higher growth. However, a survey of a range of studies shows that the effect of investment ratio on growth is consistent and robust in predicting a positive relationship. Barro (1991, 1996 and 1997), Barro and Lee (1997), Caselli, Esquivel and Lefort (1996), Levine and Renelt (1992), Sachs and Warner (1995) and MRW (1992) all confirmed this effect. There is no study (including the current study), at least not to my knowledge, that has disputed this fact.

It is observed from the literature on the determinants of long-run growth that there is an increasing emphasis on the role of human capital as an important element in explaining cross-country differences in growth and investment. For example, studies by Barro and Lee (1994), MRW (1992) and Khan and Kumar (1993) found a positive effect of the initial stock of human capital on per capita GDP growth. The theoretical rationalization of this was provided by Lucas (1988), who, in the context of analysing factors underlying long run development, stressed that human capital affects the productivity of all other factors of production. One can also argue that in a country with higher human capital – as reflected, say, by a better educated labour force – expected profits in any given type of industry would be higher. This would be, in part, due to the lower overall cost of training, and, in part, because it would be easier to introduce more advanced equipment and processes to raise productivity and lower unit costs. Thus, it is not surprising that the human capital variable enters growth regressions with a positive sign.

Economists have long stressed the importance of human capital to the process of growth. At the empirical level, the existence of human capital can alter the analysis of cross country differences; a finding that has received increasing attention since the pioneering work of MRW (1992). Human capital, as a variable, enters growth regressions in different forms. Most often, human capital proxies include education, health, life expectancy and work experience. Several studies have confirmed the positive correlation between human capital and economic

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[5] Many studies take this into consideration while estimating their regressions; some measures are normally put in place to minimize the possible effects of this problem. Mostly, periodical lags, logarithmic forms or some other forms of instrumenting variables are used. This could then help improve the reliability on such results.

growth. Well known among these are Azaraidis and Drazen (1990), Barro (1991), Easterly and Levine (1997), Levine and Renelt (1992) and MRW (1992) who have all used proxies for the level of education, and all found a statistically positive significant effect of education on growth. Knowles and Owen (1995) found out that the education proxy remains positive but looses significance after controlling for health proxies. Barro (1997), Barro and Lee (1994) and Knowles and Owen (1995) found a positive effect of health proxies on growth.

In addition, a number of theories in growth literature suggest that imbalances between physical and human capital could have important growth implications. It is argued that a higher ratio of human capital to physical capital (or initial GDP) is likely to induce rapid growth in physical capital and output. This is because, other things being equal, a low initial GDP relative to education and health indicators (human capital) implies a higher marginal productivity of capital or better ability to absorb new technologies. This should lead, respectively, to higher domestic and foreign investment that will raise the capital/labour ratio and generate output growth and higher wages, or to a higher rate of growth for a given level of physical capital (Elbadawi, 2001). This is just to say that (human and physical) capital is a fundamental ingredient required to stimulate growth.

Various studies have also examined the level and growth of education of males and females and the effect of these on economic growth. Results on female level of education are conflicting. Barro (1997) and Forbes (1997) found a negative and significant effect of the level of female education on growth while Caselli, Esquivel and Lefort (1996), Klasen (2002) and Knowles, Corgelly and Owen (2002) found a positive significant effect. On the growth of female education, Barro and Lee (1994) found a negative effect. The last four mentioned studies all found that male levels of education had a positive effect on growth; Barro and Lee (1994) confirmed that even the growth of male education has a similar effect. Finally, Sachs and Warner (1995) found a positive effect of secondary level of education on growth.

The effect of population growth on economic growth has equally received increased attention in the growth literature especially because of this variable's key position in the neo-classical growth model. This model predicts that population growth reduces economic growth. MRW (1992) confirmed this, while the results of Levine and Renelt (1992) were also negative but not robust. Barro and Lee (1994) refuted the prediction of population growth in the Solow

model and found that, on the contrary, population growth affects economic growth positively[6]. Population growth has also been said to sometimes have no effect on growth[7].

The special focus of this study on conflict and refugees requires a detailed review of literature on these variables. However, the growth literature itself has not ignored, at least one of these variables: conflict. This section will only briefly comment on this variable in growth empirics since a more detailed literature review on each of these variables is provided in sub-sections of this chapter. Most of the literature related to this study has used proxy for political instability. Political instability has manifested itself in a variety of ways, from insurgency to tensions or conflicts with neighbouring countries, to the attitude of governments toward private ownership of capital, property rights more generally, and the functioning of financial and legal institutions. Political instability can lead to migration of skilled labour and may discourage private investment (Kumar and Mlambo, 2001). More specifically, empirical studies by Alesina at el (1996), Barro (1991), Barro and Lee (1994), Caselli, Esquivel and Lefort (1996), Easterly and Levine (1997), Levine and Renelt (1992), Sachs and Warner (1995) and Sala-I-Martin (1997) have found that proxies for political instability reduce growth significantly. Barro and Lee (1994) and Sala-I-Martin (1997) included a dummy variable for war in their studies which they all found to produce a decreasing effect on growth. As Elbadawi and Ndulu (2001) rightly put it, an increase in political uncertainty has the equivalent effect of a decline in the security of property rights, and it, hence, has the same effect on growth as economic distortions.

After briefly seeing the behaviour of key variables of the Solow growth model in previous studies, it is important to state that other variables of considerable interest have produced very interesting results in the empirics of growth. The influential paper by Easterly and Levine (1997) added something new to growth empirics. They found out that Ethno-linguistic fractionalisation significantly reduces growth. These findings were again confirmed in a more recent paper by Alesina *et al*[8]. Easterly and Levine (1997) have established that greater

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[6] The results are so after controlling for fertility. A higher population growth rate signals higher net immigration or lower mortality, elements that would positively relate to growth (Chung 1998). Economists and demographers in this line of thinking are what Bloom and Williamson (1998) refer to as population optimists. Easter Boserup could be regarded as one of these.

[7] See Bloom and Williamson (1998) and Bloom et al (2001).

[8] They provide a new measure of ethnic fragmentation based on a broader classification of groups that takes into account language and other cleavages. The negative effect of ethnic fragmentation on growth is reinforced with

fractionalisation reduces growth, but have interpreted this as due to the greater risk of conflict in fractionalised societies. In fact, the negative effect of ethnic fragmentation on growth is reinforced with the new data, and the latter authors are able to highlight the differences between ethnic, linguistic and religious fractionalisation. In contrast to this view, Collier and Hoeffler (1998) found that it is not ethno-linguistic fractionalisation which is damaging to societies but that degree of fractionalisation which most facilitates rebel coordination. Their results suggest a non-linear relationship between ethnolinguistic fractionalisation and economic growth.

As already noted by Hoeffler (2000), within the empirical growth literature considerable attention has been paid to the slow growth performance of sub-Saharan Africa. Among others, Barro (1991, 1997), Levine and Renelt (1992) and Sala-I-Martin (1997a, 1997b) find that the coefficient on a dummy variable for African countries is negative and significant in a number of different specifications. Barro (1997) and Barro and Lee (1994) have found a significant positive effect of the East Asia dummy. These same studies, with Easterly and Levine[9] (1997) and Sala-I-Martin (1997) found a significant negative effect of the Latin America and Sub-Saharan Africa dummy. Several reasons have been given by Elbadawi and Ndulu (2001) for sub-Saharan Africa's failure to catch up with the rest of the world. However, Ciccone (1996) reinterprets regional effects as being influenced by neighbouring effects. He finds that neighbouring countries' economic performances significantly affect a country's growth rate

It is important to note at this point that the literature on the empirics of growth has not grown without checks and balances. The problem of the Solow growth model, as also observed by MRW (1992), is that though the exogenous factors (savings and population growth) in this model are predicted to have the right direction on growth, it does not predict the extent of influence/magnitude of the effects of these factors on GDP. MRW found out that the effects of saving and population growth on GDP are too large. And to understand the relation between saving, population growth, and GDP, one must go beyond the textbook Solow model. Again, emphasis on human capital, though valid, presents highly questionable measure of this variable. Human capital investment is normally taken in the form of education, at most times ignoring investment in health, among other things. This is even the case with the most widely

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the new data, and they are able to highlight the differences between ethnic, linguistic and religious fractionalisation.

[9] Even after controlling for entho-linguistic fractionalization.

cited work of MRW, who admitted that, despite the narrowed focus, measurement of human capital presents great practical difficulties. Measuring forgone earnings poses several difficulties. Furthermore, not all spending on education is intended to yield productive human capital: philosophy, religion and literature, for example, although serving in part to train the mind, might also be a form of consumption. They used a proxy for the rate of human-capital accumulation that measures approximately the percentage of the working-age population that is in secondary school (i.e., enrolment rates[10]). In my opinion, this could be criticised from two angles. Firstly, that higher education, which is expected to yield more output, is completely ignored is a weakness. Secondly, school enrolment does not necessarily mean the possession of education skills.

Some preliminary conclusions can be reached after probing the literature. Firstly, it is clear that most of the predictions of the Solow growth model have been widely confirmed in different studies. With a few exceptions, the convergence hypothesis, especially, holds for most data. In addition, it appears that the augmented Solow model provides a near complete explanation for why some countries are rich and other countries poor. Previous studies show that for physical investment to achieve sufficiently high growth payoffs, sufficient investment in other complementary factors (human capital and technical knowledge), maintenance of stable macroeconomic environment and avoidance of high microeconomic distortions, are required.

3.2 PREVIOUS FINDINGS ON THE EFFECTS OF HOSTING REFUGEES

One of the fundamental objectives of this study is to scrutinize the effects of refugees on host nations as a whole, instead of focusing solely on the economic welfare of refugees themselves. One of the reasons put forward for such an emphasis is the scanty attention given by previous authors in this direction. As Whitaker (2002) recently noted, there is a small but growing body of academic research about the impact of refugees on host populations. Consequently, it is not expected, that literature material on the effects of refugees on host countries, specifically, will be easy to come by. This information, notwithstanding, literature on country specific studies on the effects of hosting refugees and, sometimes on the economic contribution of refugees in their countries of asylum has been reviewed instead. Since this

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[10] Citations from Hoeffler (2000), Gemmell (1996) show that proxying the level of human capital by using school enrolment rates is problematic, because it conflates the level and accumulation effects of human capital and leads to misinterpretations of the role of the labour force growth.

study was originally intended to include only countries in Africa, and the inclusion of other countries from Asia and Latin America in the quantitative analysis is mainly for comparative purposes; the review of literature on refugees is limited to those studies on refugees in Africa. This is not expected to pose problems for the study since, to some extent, the effects of refugees in Africa would be similar to those effects refugees produce on Asian and Latin American countries which have similar economic status characteristics with African countries. Literature will not only be reviewed in light of what the effects of hosting refugees have been, but will also include the magnitude of refugee flow in Africa, the positive and negative effects of hosting refugees, and problems associated with refugee assistance.

Refugeeism, as a main problem emerged in Africa towards the end of the 1950's, when the resistance of the Africans against apartheid and colonialism started to take an organised form. The violence unleashed against this resistance generated refugees who, in order to escape persecution and massacre, fled from their traditional environment and crossed international boundaries to seek protection (Kibreab, 1985). On the contrary, Blavo (1999) argued that the refugee situation in Africa is the direct outcome of the numerous conflicts plaguing almost all the countries in Africa since they attained independence. These authors suggest that conflict during colonialism (or fighting for its abolition), and clashes in the post colonial era have been leading causes stimulating the flow of refugees.

The problems of refugees, and the accompanying one of how to handle them, are not new phenomena. Indeed, as Gorman (1987) observed, UNHCR and many governments began to think in the early 1980s, about the developmental implications of handling large scale refugee flows. Today, Africa is seen bearing the huge burden of refugees at a time of unprecedented socio-economic crisis. As Khasiani (1989) rightly puts it, people who lack most of the basic needs in life are being called upon to share the little they have with refugees.

Although the development process depends on a complex of socio-economic variables (population, resources, infrastructure, capital formation, trade, political stability, skill level, work ethic, etc.), it is expected that the effects of refugees on a country's economy will partly be determined by its stage and rate of economic development. Blavo's (1999) contribution implicitly suggests that refugees produce negative effects on the economy since African countries which host refugees are among the poorest and least developed countries in the

world: they have fragile agricultural economies and insufficiently developed resources and infrastructure. It is, therefore, interesting to note that almost all of Africa is involved; each country either producing and/or receiving refugees, however insignificant. Africa has experienced the most acute refugee problems in terms both of magnitude and complexity (UNHCR, 1982). With an estimated 6 million or more refugees and internally displaced persons Africa, the poorest of all regions is home to half of the world's refugees, according to this report. They originate from and settle in countries designated as the least developed in the world, countries that are plagued with problems of famine, war, drought, and political instability.

Khasiana's (1989) work on the specific case of refugee women and refugee professionals, started by noting the scarcity and uneven distribution of Africa's resources. Rampant poverty is compounded by rapidly increasing populations. The problems of refugees are, therefore, superimposed on other development problems. The large number of refugees, including women and professionals, constitutes a burden on the economies of receiving countries. Limited resources lead to the establishment of inadequate, and often inappropriate, integration programmes which marginalize able-bodied refugee women and highly skilled refugee professionals.

A question in time whose partial answers could be seen in the paragraphs above but deserves further attention is: why is it that one does not see positive effects of refugees on the economies in Africa? One fundamental problem which has consensus in the literature is that refugees come from poor countries and move into equally poor ones. A UNHCR (1981) report fully described this scenario. The dilemma of Africa's refugees is that they are drawn from one of the poorest regions of the world and seek asylum in equally poor countries in the same region. Countries of asylum in developing countries face unpredictable problems of drought and food deficits; also, famine and war have become common. Thus a case like Somalia, a poor country, accepts a large and increasing number of refugees from Ethiopia and Uganda. This country and many others have had to bear heavy refugee burdens, in spite of their frail economies. In some countries, the situation could be described as a crushing burden for the vacillating economy of countries most often classed among the poorest on the planet.

Economically, Africa is the weakest in food production, and lowest per capita GDP in the world, in spite of abundant land resources. Africa can hardly feed, educate and provide adequate shelter and remunerative jobs for its rapidly increasing population, a situation that is exacerbated by internal strife, natural disaster, drought and famine (Adepoju, 1984). Under these conditions, the refugee problem is overwhelming: in Somalia, Ethiopia and Djibouti, for instance, the proportion of needy refugees (in the organised camps) to the local population in mid 1982 ranged from 1:5 to 1:6. Other estimates put the ratio of refugees to the total population as 1:3 in Somalia, 1:7 in Ethiopia and 1:18 in Djibouti (United States Council for Refugees, 1982).

It is misleading to suggest that Africa as a continent carries a heavy burden of hosting refugees, which is equally shared by its countries. It may well be the case that some countries suffer more than others because the refugee burden itself is far from evenly distributed among sub-regions and countries of Africa. As Kibreab (1983) noted, only 18 of the 51 member states of the OAU accommodate 90% of refugees. Yet these countries are among the least developed and "most seriously affected" by recent adverse economic conditions. Observing this trend even on a global level, the international community has recently stressed the principle of burden-sharing, a major recommendation of the Arusha refugee conference in 1979. This was later ratified by the Organnisation of African Unity's Council of Ministers. By adopting this strategy, Adepoju (1989) writes, African countries that do not harbour refugees will make financial contributions to those that provide asylum to large numbers. So far, however, the recommendation has not been implemented by many African governments. The work of Erikson *et al* (1981) further reinforces the need for countries to adhere to this principle of burden sharing in order to alleviate the burden of hosting refugees on a few select countries, because it is not only the sheer magnitude of numbers of refugees and internally displaced persons in Africa that forms part of this burden, but also the concentration of refugees in a few countries with frail economies.

Burden sharing does not necessarily mean the transfer of refugees from first asylum countries to second asylum countries or even further. The burden can also be shared in the form of financial contributions by unaffected countries to those hosting a large influx of refugees; unfortunately this does not take place (Kibreab, 1983). Kibreab's (1985) comparative analysis of the assistance received by refugees in different parts of the world demonstrated that African

refugees receive less from international assistance than refugees in the other parts of the world, per person. While the average African refugee receives an average of $22 per annum, the refugee in the other parts of the world receives $56. Adepoju (1989) similarly suggests that the problem of refugees in Africa is further heightened by the attitude of the West to African refugees specifically. While a number of developed countries have resettled refugees from Asia and Latin America, resettlement of African refugees has been mainly conducted by African countries. To aggravate the situation, those few African refugees who have resettled in developed countries are the affluent, who could have possibly contributed positively to the economies of African asylum countries. Koehn (1994) confirmed this with the observation of the selective admission process employed by northern nations which often removes the few skilled refugees who are prepared to perform vital community-development roles in first-asylum countries.

The effects of hosting refugees include a complex chain of effects which spread from the asylum country to the international community. Every refugee situation affects firstly, the refugee him- or herself; secondly, the country of asylum; thirdly, the country of origin and, finally, the international community (Kibreab, 1985). There is no doubt that the massive influx of refugees in an underdeveloped African country, especially during the relief and rehabilitation phases, represents a heavy burden on the economy and infrastructural services. Under favourable conditions, the presence of refugees can turn from a burden to a stimulus leading to economic growth and development (Kibreab, 1985).

The refugee problem in Africa has generated considerable economic and social misery and dislocation, and resulted in untold human suffering. It is also one of the most complex and agonizing of Africa's problems (Adepoju, 1982; Gould, 1974[11]). Major refugee influxes have severely disrupted the normal development activities of Sudan, Tanzania and Somalia. Inadequate resources also mean that increasing refugee populations exert tremendous pressure on housing, health and educational facilities (Adepoju, 1989). Large numbers of desperate refugees place stress on fragile natural resources in the reception zone (Koehn, 1994). The presence of a large number of exiled aliens leads to over-exploitation of the common property resources (CPRs) such as water, pasture, wood and charcoal. The rural refugee population claims a share of these resources, especially when they are in camps or settlements (Anand

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[11] Cited in Adepoju, A. (1989).

1993). Stein (1982), too, has dismissed the suggestion that refugee influxes constitute an opportunity for host countries because resources are too limited. As noted, countries where social services are poorly developed, refugees may become a burden on educational systems and health care, as well as on water supply. In Rogge's (1987) view, the main constraints on refugee-related development are the numbers of refugees and limited land and resources. Refugees frequently find themselves blamed for creating political instability in the host country. In this regard, Sorenson (1994) has shown that, whatever the real effect of refugee influxes, refugees are often perceived as burdens on the host society[12].

Having surveyed studies that have theoretically discussed the negative effects of hosting refugees, it is justifiable to look at those that have argued for the opposite to be true. Starting with Adepoju (1989), although the general view seem to hold that African refugees are characteristically illiterate and unskilled, there are skilled, educated, young refugees who could contribute, and indeed have contributed, significantly to the development of host economies. African refugees also manifest evidence of their capacity for hard work and perseverance to attain self-sufficiency despite all odds operating against them. They, therefore, do not always represent a drain on the resources and services of the host society, but often actively contribute to economic growth. In this regard, the massive influx of refugees can help to overcome the bottleneck syndrome (Kibreab, 1985). In a country paper presented by Somalia[13] it is argued that although the refugee situation in Somalia could be viewed as a heavy burden on the economy, it is also not a disadvantage to the country.

Tanzania is one of the major refugee hosting countries in Africa. Here, although the presence of such large influx represents a considerable burden, especially at the relief and rehabilitation phases, they contribute considerable food crop surpluses and cash crops after the establishment of the refugees in settlement schemes through international and the government's assistance. This is very important food which further, improves the country's supply of foreign exchange (Kibreab 1985).

Tanzania offers not a unique case, but a reflection of the state in many other refugee-hosting African countries. It shows that under favourable conditions, refugees can be a benefit. For

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[12] For example, according to Bulcha (1988), refugees in the Sudan were blamed for water shortages in 1982 and 1983 even though the problems were technical and unrelated to their presence.
[13] Country paper: Somalia in UNHCR (1981).

example, whenever agricultural land, technical knowledge, efficient management, infrastructural services and inputs such as seeds, fertilizers and insecticides, tools, etc., are not in short supply, the influx of refugees can, in the long run, turn from a burden to a stimulus. However, this requires an integration of refugee settlements into regional planning, because, for as long as refugee settlements exist as isolated enclaves, their impact on the economic development of the host country will remain limited and the integration of the refugees into the host society will be hampered (Kibreab, 1985).

Many argue that the presence of refugees has generated international financial support for national development programmes. However, refugees have not always been passive recipients of developmental aid. They have been creative and industrious, and have posed a challenge to host nationals to upgrade their standards of achievement. Some refugees have even lent their expertise in various fields to the service of the country which offered them asylum, thus setting an example of self-sacrifice for nationals to emulate (Blavo 1999).

The current study, like Kibreab's (1991), as a review of the literature on refugee impact on national, regional and local economic and social infrastructures, reveals two discernible views: the perception of refugees as an economic and social burden on the host countries, and its collorary which portrays refugees as representing an opportunity for social progress and improved welfare. Most scholars are exponents of the view that refugees constitute both a burden and an asset. Indeed, as Kuhlman (1990) argues, determining the effect of refugee movements on host countries is not always a straightforward[14] matter. Refugee influxes may affect various classes and regions differently within the host country. Kuhlman further argues that the impact of refugees on the host country may not always be as it initially seems, and further research is required to accurately determine the positive or negative effect that refugees may have on their host country. It has been suggested, though, that refugees can be assets to underdeveloped countries because of their labour power and skills, and because they provide a broader market and generate demands for certain goods.

To get a better view on the effects refugees may exert on the economies of their hosts, it is important to look at the type of assistance the international community gives to refugees. The

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[14] For example, while workers may be threatened by a decrease in wages because of an increased available supply of labour, employers may benefit.

international community can play a strategic role in turning refugee labour into a meaningful and productive outcome because the former owns most of the finance needed to make this a reality. There is now an increasing awareness within the international community that the traditional distinction between humanitarian relief and development assistance needs to be reviewed (Cimade, Inodep and Mink 1986). However, this approach is also difficult to implement since refugee populations cannot be helped in isolation when surrounded by impoverished societies. Local villagers have at times settled in large numbers around refugee camps to share the refugees' food and water. According to Koehn (1994) any assistance that excludes poor host communities exacerbates the hostility, tension and insecurity experienced by refugees, whereas, an integrated development programme would require large-scale financial and technical input.

The idea of linking refugee aid to wider development agenda, though not a new notion attracted increased attention during the 1980s. Much of this recent debate focused on Africa, where substantial growth in refugee populations during the early 1980s combined with deteriorating economic conditions in refugee-hosting countries, raised concern that the traditional hospitality shown by Africans to their exiled kin and neighbours was in danger of decline (Gorman, 1994). Over the years, there have been many calls for strategies linking refugee relief with local development, but a number of factors have impeded their effective integration. Contributing factors including lack of donor support, weak coordination between refugee and development bureaucracies, and increasing numbers of refugees can be counted among these (Betts 1981; Gorman 1994).

The long standing debate on linking refugee relief aid to development aid has received wide consensus. A persistently contentious issue militating against this argument, however, is the relationship between the host and refugee populations. Flexible development has to take into account the relationships between refugees and their hosts, which can vary from a totally separate existence, such as Thailand or Hong Kong, to complete integration like earlier refugees in Tanzania (Harper et al, 1987). However, as Kibreab (1985) has noted, the attitude of the host society towards the incoming refugees is influenced by the availability of resources to the host population.

Several insights were gathered from the literature on the effects of hosting refugees. Several case studies[15] indicate that some people benefit while others lose. For example, the poorer among the host population do not benefit from the presence of refugees, for an increase in labour supply depresses their wages. Despite the common assumption that refugees represent a problem or burden (Harrel-Bond 1986), it is clear that refugee migrations bring both costs and benefits to host countries (Kuhlman 1994; Sorenson 1994; J. Baker 1995[16]) Whitaker (2002), especially, found out that the impact of refugees in Western Tanzania varied within host communities based on factors such as gender, age and class. This, linked to the broader picture, suggests it could be difficult to estimate and ascertain the total effects of refugees on a country since it is possible that some parts of the country gain while other parts lose. The effects of refugees on the host economy depend on the prevailing economic circumstance of the host country. Since the relationship between the host population and that of refugees is a factor that could enhance positive effects of refugees, it is unsurprising that the refugee variable in the regressions (see chapter 5) show both negative and positive signs at different specifications.

3.3 THE EFFECTS OF CONFLICT ON ECONOMIC GROWTH: PREVIOUS FINDINGS

This study does not claim originality among studies which consider the relationship between economic outcomes and political instability in a large sample of countries[17]. A considerable volume of literature has already attributed part of the economic failure of the developing countries to the prevalence of conflict in these regions. Enough evidence has been shown by previous studies to convince one that the prevalence of conflict in developing countries could explain a greater part of its current economic situation because meaningful economic development cannot take place without peace (Mkandawire and Soludo, 2001). This sub-section, therefore, reviews studies that have empirically and or theoretically established the relationship between conflict and economic growth. The literature review on the effects of conflict on economic growth reveals that some authors took a theoretical approach while others empirically proved the effects of conflict on growth. Both types of research have been briefly reviewed and their findings will be discussed below.

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[15] Among many others, Kibreab (1985) and Whitaker (2002).
[16] Studies cited in Whitaker (2002).
[17] There exists vast literature concerning this issue. Few of the most influential contributions are Colleir (1998, 2000), Collier and Hoeffler (1998, 2000, 2001 2002), Elbadawi (1999) and Elbadawi and Sambanis (2000).

Economic growth and political stability are deeply interconnected, as Alesina *et al,* (1992) have noted. Abadie and Gardeazabal (2001) have added that political instability is believed to have strong adverse effects on economic prosperity. War, in general, and civil war, in particular, is one of the main causes of human suffering and economic underdevelopment (Stewart and FitzGerald 2001). In addition to the human sacrifice and suffering caused by wars, wars have had a devastating effect on the economic performance of the countries involved (Tangeras and Lagerlöf 2003). Within the affected country, civil war evidently reduces GDP and accentuates poverty (Azam, *et al* 2001).

It seems that the economic and social costs of conflicts can be divided into two: the immediate human costs and the longer term development costs. Stewart and FitzGerald (2001) observed that the greater part of the human costs of war does not result directly from battle deaths and injuries, but rather indirectly from the loss of livelihoods caused by the dislocation of the economy and society. Azam *et al* (2001) also noted a particularly striking effect of civil wars: that most of the casualties involved are civilians. Estimates vary widely, but a safe guess is that between 60 and 80 percent of war-related deaths are civilians[18]. Civil wars kill far more civilians, even after the conflict is over, than the number of combatants that die during the conflict (Hoeffler and Reynal-Querol, 2003). Between 1990, some fifteen million deaths were caused directly or indirectly by wars of all types in developing countries (Stewart and FitzGerald 2001). Stewart and FitzGerald postulate that war is very costly in terms of the sacrifice of human lives and social and economic development. This is a truism which we are reminded of daily by the media. These wars, they asserted, are typically an economic and humanitarian disaster for the affected country. For those who care about development, civil war is, therefore, a major problem.

Collier (1998) explicitly quantified the effects of civil war on growth both during the war and during the first five post war years, and discovered consequences on the growth rate of GDP, rather than simply on its level. Similarly, Hoeffler and Reynal-Querol (2003) find that the effect of civil wars on economic growth depends on the duration of the conflict. A five year war reduces the average growth rate over five years by 12 percent. Thus, per annum the average growth rate would be reduced by about 2.4%. This result is comparable to Collier's earlier one (1998), which found out that during civil wars, the GDP per capita declines at an

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[18] See Cairns (1997).

annual rate of 2.2% relative to its counterfactual. Collier (1998) further observed that after long civil war the economy recovers rapidly, whereas after short wars it continues to decline. The very fact of civil war constitutes news that the society is prone to civil war. Further, the conflict is likely to have polarised the society, so making it easier to coordinate future rebellions. Because shorter wars are incomplete, confidence in the security is still fluid and these might continue to affect the economy by reducing the motivation to invest. Collier's (1998) study also empirically discovered that if civil war lasts only a year, it causes a loss of growth during the first years of peace of 2.1% per annum, a loss that is not significantly different from that which the country will incur had the war continued (2.2%).

Another strong theoretical argument underlying the relationship between conflict and growth is that during civil war government increase their military expenditure and this directly reduces economic growth. Government military spending increases during and immediately after war. A study by Hoeffler and Reynal-Querol (2003) states that during civil war military expenditure rises as a percentage of GDP from 2.8% to 5.0%. However, once the war has ended military expenditure does not return to its former level. The average country during the first decade post-conflict spends 4.5% of GDP on the military. The increase in government military spending is part of the diversion of resources into violence but also harmful to growth in that the resources controlled by rebel groups are also a diversion from productive activities. These diversions[19] might be significant, and they increase with the duration of the conflict.

A different argument leading to a similar effect of conflict on growth is that the probability of rebel victory is decreasing in government military expenditure per capita, which is in turn a function of the per capita taxable capacity of the economy (Collier and Hoeffler, 1998). But rebellions, as also noted by Azam et al (2001) statistically have a low chance of succeeding, and if they do, this only comes after a long and protracted struggle. Hence, because as an increase in the resources available to a government at war would most likely be diverted to hasten their victory, foreign aid to governments should be curtailed when they are involved in a civil war; similarly, their export revenues should be restricted. Collier and Hoeffler (2002) observed that donors reduce aid during periods of active conflict, which involves a trade off between protecting civilians and encouraging conflict since there is now reasonable evidence

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[19] An example is Mozambique where about forty percent of immobile capital in the agricultural, communications and administrative sector was destroyed (Hoeffler and Reynal-Querol, 2003).

to suggest that in many poor countries aid is effective in raising growth rates (Burnside and Dollar, 1997 and Collier and Dollar, 2001). This creates a dilemma situation for the international community. How much aid do poor countries in conflict need for their citizens to survive, and what is the guarantee that these funds will not be used to acquire more military equipment? What we see, then, in most countries in conflict is relief aid, instead of aid for development, which echoes the diversion effect of conflict on growth.

The cost of conflict on any economy correlates positively with the number of warring factions: the more numerous the groups that are involved in a rebellion, the more resources are invested into the conflict. Furthermore, the more groups are involved, the lower the likelihood that each wins, hence the prolonged conflict. This situation is more devastating for an economy in which all parties involved in the conflict are nationals of the same country; this is the case with civil wars which are, in fact, the dominant mode of conflict in most developing countries. Hoeffler and Reynal-Querol, (2003) confirm that, civil wars are now the most common form of major armed conflict, that are liable to be more damaging than international wars in several respects. This is because they are inevitably fought entirely on the territory of the country (Collier 1998), and conflict leads to costly waste of resources by all involved parties.

Further, the effect of civil war on the flight of financial capital has recently been estimated by Collier *et al* (2002). Prior to conflict the typical civil war country held 8.6 % of its private wealth abroad. By the end of the civil war this had risen to an astonishing 19.7% so that more than a tenth of the private capital stock had been shifted abroad. Even this probably underestimates the extent of overall capital flight. As also noted by Hoeffler and Reynal-Querol (2003), for example, cattle may be moved into neighbouring countries and sold.

The literature surveyed also offers evidence of the link between conflict and the flow of refugees claimed in this study. According to Hoeffler and Reynal-Querol (2003), the primary response to the fear of theft, rape and murder is flight; people flee and try to shift their assets to safety. These authors emphasised that the most direct human costs of civil war are fatalities and population displacements since civil wars provide a significant impetus to emigration. Some of these emigrants, especially those in developed countries, will provide an incentive to other family members to join them post-conflict, thereby encouraging further emigration.

Economists such as Grossman (1991, 1999) used rational choice models to explain conflict. In these models, an individual decide whether or not to join the rebel forces and weigh up their forgone GDP from other activities, against the possible gains from rebellion. Empirically these opportunity costs are an important determinant of the risk of conflict and economic variables such as the level, growth and structure of GDP have been identified as important explanatory factors of conflict. Collier and Hoeffler (1998, 2002) find that countries with low average per capita GDPs have a higher risk of conflict. Low economic growth also increases the risk of conflict because GDP opportunities from peaceful activities are diminished. The opportunity cost of conflict could also be ascertained by the use of an alternative measure of economic opportunities, in other words, through a calculation of the number of young men enrolled in secondary education[20]. Empirically, a higher enrolment rate is associated with a lower risk of conflict (Azam, Colleir and Hoeffler 2001). Therefore, the opportunity and disruption to economic activity cost arising as a result of conflict can be expected to increase with per capita GDP. A high GDP population has more to lose than a low GDP one and these costs increase with the duration of the conflict (Collier and Hoeffler 1998).

Also important is that the means by which conflicts are sustained implies more harm to the economy. In the past, possible sources of conflict finance have been foreign governments, natural resources and donations from a diasporic[21] population. In order to finance their operations, rebels can also use kidnappings-for-ransom, extortion, and (less frequently) robberies (Abadie and Gardeazabal 2001). However, much stronger evidence emerges from the analysis of natural resources as a source of finance. There is strong case study evidence that countries with a high share of natural resources in their exports are more likely to experience a war (klare 2001) because resources such as diamonds and timber can be looted and used to finance the war[22]. According to Azam *et al* (2001), cross country regressions provide strong evidence to support this causal link between natural resources and the risk of war. There is also a wealth of evidence from case studies on the importance of Diasporas in the financing of conflicts; Colleir and Hoeffler (2002) present some statistical evidence that this is a general phenomenon.

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[20] The advantage of this measure is that it concentrates on the group from which a rebel movement draws most of its recruits.

[21] One example are the exile-Tamils in Europe and Northern America supporting the Tamil Tiger's rebellion against the government of Sri Lanka

[22] Current examples of the protracted civil wars in Liberia and Sierra Leone stand prominent in this case.

There is also a new wave of empirical evidence on the effects of civil wars on neighbouring countries; civil wars are not only devastating for the countries in which they are fought, but they also generate international spill over. Murdoch and Sandler (2001) find that civil wars substantially reduce the growth in both the war torn country and its neighbours' growth. This reduction, according to Murdoch and Sandler, is due to multiple factors, such as the disruption to trade, heightened risk perception by investors, a reduction of input supply and resources spent on the assistance to refugees. In addition, Collier and Hoeffler (2001) find that the risk of a civil war significantly increases once there is a war in one of the neighbouring states. Today, the start of conflict in the early 90s in Sierra Leone could be traced back to the Liberian conflict; subsequently, the start of conflict in Guinea in the late 90s is closely linked to the then existing conflict in Sierra Leone. This confirms the claim that conflict also has spill over effect on to neighbours, raising their risk of civil conflict, military spending, and reducing their growth (Azam et al, 2001).

There has been a long-standing debate on the determinants of conflict. A variety of possible causes have been empirically tested. Prominent in the literature is the debate on the effects of ethnic diversity on the initiation of conflict. Easterly and Levine's (1997) argument that diversity in ethnicity is a breeding ground for conflict remains widely quoted on this issue. Collier and Hoeffler (2000) rejected this argument and, instead, suggested that a more polarized society has a lower likelihood of being involved in conflict. A very recent paper by Tangeras and Lagerlöf (2003) on Ethnic Diversity and Civil War, presents a theoretical study into the causes of civil wars, which subscribes to the latter view. These scholars noted that the likelihood of conflict is maximized when there are two ethnic groups. Furthermore, there is enough evidence to show that although all countries on the African continent are ethnically divided, only a fraction of them have experienced civil war, especially that which is initiated on ethnic grounds. This observation has lead Azam (2001) to the conclusion that the core of the problem is a failure of the state to reconcile differences, not ethnic diversity in itself. In summary, a rather popular argument is that countries with moderate ethnic diversity seem to be most at risk of civil of war, whereas both homogeneous and more ethnically diverse societies face lower risks (Collier and Hoeffler 1998, 2000, 2002; Collier , Hoeffler and Söderbom 1998; Elbadawi and Sambanis 2000).

It is important to note that the physical end of conflict does not coincide with the end of human and economic suffering. Another striking consequence of civil war, alongside the number of deaths or injuries, relates to the severe public health consequences after war ends (Hoeffler and Reynal-Querol 2003). Once a war has ended countries face a very high risk of recurrent conflict. Empirically, as Azam et al (2001) have estimated, there is a 50 percent risk of a conflict re-starting within five years of a settlement. In other words, once a country has had a civil war it is likely to have further conflict, so that, although peace is an improvement, risk levels do not return to their pre-conflict level. Consequently, even in peace time, people may still wish to move assets abroad. Capital repatriation requires more than just peace (Hoeffler and Reynal-Querol 2003). Therefore, countries coming out of conflict are typically in need of both financial resources and policy advice. Their societies are often extremely fragile and so it is important that the response of the international development community should be as appropriate as possible (Collier and Hoeffler 2002).

One can therefore conclude on theoretical and empirical grounds that there is an obvious relationship between conflict and growth. In fact, the empirical cross-country evidence on the relation between conflict and growth is consistent in establishing the strong negative effect of conflict on growth. However, a study on the effects of conflict on economic growth needs to deal with the problem of joint endogeneity or reverse causality. Even if it is true that a high propensity for having frequent conflicts reduces growth, it may also be the case that low growth increases the probability of conflict. According to Abadie and Gardeazabal (2001) a potential caveat of the literature on the empirical relationship between conflict and growth is that part of the observed association between political conflict and economic variables across countries is thought to be created by reverse causation, since political instability is not only a cause but also an effect of the fluctuations in economic variables.

3.4 CONCLUSION

This chapter has reviewed literature for this study. Literature on growth empirics which is the cornerstone for analyses in this study has been reviewed. With very few exceptions in the literature, there is consensus on the conditional convergence hypothesis of the Solow growth model. The literature confirmed the hypothesis (indicated by the negative partial correlation between initial GDP and subsequent growth in empirical estimations) that poorer countries grow faster than richer countries. Studies reviewed show that the effect of investment on

economic growth is positive and robust across different specifications. Although the general direction on results of population growth's effect on economic growth is as predicted by the Solow model, few studies found this sign to be opposite. The results suggest that the effect of population growth on economic growth depends on several other factors; population and economic growth influence each other. Several other factors like political instability and ethnic fractionalization (little consensus on the direct effect) are also believed to reduce economic growth. Studies also confirmed the slow growth rate of Sub-Saharan Africa compared to other regions of the developing world. It is also observed from the literature that the effects of hosting refugees depend largely on the economic development situation of the countries of asylum. Countries which are already fairing well benefit from refugees while the reverse is true for slow growing countries. However, some authors find that since developing countries, especially most of those in Africa, are already economically depressed, the burden of refugees further worsens the situation. In addition, from the review, we learn that conflict affects economic growth negatively; the duration of conflict deepens the effects of conflict and even when the conflict is over, the economy takes at least five years to begin to grow at it pre-conflict rate.

In summary, the Solow growth model is found to be useful in the analyses of economic growth differences among countries especially the human capital augmented Solow model. The effects of refugees on host countries depend on the economic situation of the country and conflict negatively affects economic growth.

The following chapter describes the data used in this study to estimate results on the effects of conflicts and refugees in developing countries. Some of the variables used by previous authors discussed in this chapter have been used but specific variables to this study have been described in details with the provision of summary statistics.

CHAPTER FOUR: DATA COLLECTION

4.0 INTRODUCTION

The previous chapter reviewed literature on the empirics of growth, the effects of conflict on economic growth, the impact of hosting refugees and the effects of demographic structure on economic growth. The study investigates issues similar to those in previous studies but extends most of the research that have been reviewed. This requires the compilation of data for the econometric analyses of the effects of conflict and refugees on economic growth. This chapter is devoted to explaining this process of data compilation and provides an explanation of the data. In addition to this, a discussion on the availability and reliability of data of the main variables of the study is presented. The chapter also presents summary statistics for the entire data and a descriptive statistics by regional data.

4.1   SAMPLE SELECTION

The representative domain for this study is developing countries chosen per geographic region as prescribed by the categorization 'developing' and 'developed countries'. The elements of focus are conflict and refugees. Having identified the population to be researched, arranged access to it via an accurate sampling frame, the next step was to decide how the sample itself is to be selected.

Initially, the study intended to have only African countries for the econometric analyses. On further consideration, the explanation of cross country growth differences has largely been on across countries as well as regions. The latter case creates the possibility for regional comparisons which seem to be favoured in the literature. As a result, the observational focus of the study shifted to including countries in the developing world rather than a regional focus on Africa. Data is collected for countries in these regions which host refugees and or have experienced conflict in the last decade (1990-2000). These include 52 countries in Africa stratified into North Africa and Sub-Saharan Africa consisting of 5 and 47 countries respectively; 17 countries in Asia[1] and 14 countries in Latin America[2]. Thus a total sample

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[1] Some of the countries are not strictly in Asia by World Bank geographical classification of countries but since these are few and are closer to Asia than other continents, the countries, Papua New Guinea, Indonesia, Philippines (Pacific) Iran in the middle East, have been classified under Asia.
[2] One country in the Caribbean, Trinidad and Tobago, has been included in the Latin America group for the purposes of these analyses.

size of 83 countries is used in the analyses[3]. Countries in Asia and Latin America were selected on the basis that they had served either as host to refugees or have in themselves, been plagued by some form of conflict. This scenario contrasts with my selection of African countries since all are included (subject to data availability) irrespective of whether they had a history of recent conflict, acted as hosts for refugees, or not[4]. Since the underlying aim of the study is to identify the effects of refugees, in addition to haven experienced conflict, the inclusion of Asia and Latin America adds a comparative aspect to the study.

However, the importance of Asia as a region of asylum has steadily increased, while Africa's role in hosting refugees is diminishing. Asia's share in providing asylum increased from 36% in 1992-1996 to 43% in 1997-2001, whereas Africa's share fell from 37 to 29% (UNHCR 2002). Thus, in addition to comparative purposes, Asia holds a significant position in hosting forced migrants; this makes it a relevant region for the analyses of this study.

4.2 DATA ANALYSIS

Most research in Development Economics involves the use of statistical data to establish a relationship between several factors (commonly known as independent variables) and one specific factor (the dependent variable). The first stage before collecting data therefore requires the identification of such variables. After this, sources of data for the identified variables will be sought and then data will be collected. This section comments on these processes of data collection, making reference to their sources and coding.

4.2.1 The Data

There are still many reasons for the use of secondary sources of data for research among which are that they can be the sole source of data in a research project. This state of affairs applies to this study. Spatial and temporal data on refugee statistics cannot be collected by an individual in a very short time as is the case for academic purpose where time and finance are determinants of the scope and nature of research. Hence the collection of data on refugee statistics on countries and conflict data is only possible by a specialized agency set up for the purpose or whose objective includes data collection. Data collected by these agencies are

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[3] This sample was finally reduced to 72 after accounting for missing data explained in another section of this chapter. Empirical studies on developing countries leave one with fewer options on the choice of number of observations because data availability remains a recurring problem.

[4] However, almost all African countries have been affected by the conflict and or refugee flow except for 3 of the 4 island countries included in this study (Cape Verde, Madagascar and Mauritius).

normally not only to be provided for academic analysis but could be equally used for such purposes. Data for this study is, therefore, entirely from secondary sources because of the impracticality of primary data collection covering a range of countries and for the additional fact that data on key variables could be collected from reliable sources as required in investigating, empirically the effects of refugees and conflict in developing countries.

This research used GDP per capita growth rate as the dependent variable with several other independent variables, as explained in the model. The latter include the number of refugees in a country and conflict, both of which are my major variables of interest. Data on these variables has been collected from the UNHCR data base for the period 1990 to 2000. This period depicts the peak of refugee flow and conflict in most developing countries (see figure 1.1) and table 1.4. The purpose of the variable will be to examine its effect on economic fluctuation in developing countries. However, it would be misleading, erroneous, and, in fact, dangerous to claim that the flow of refugees is the only, factor responsible for the rate at which economies of developing countries are growing. Therefore, the estimation will also include the collection of data on several other variables (mostly socio-economic variables) that seem to affect economic growth.

Data has been specifically utilised from the World Bank CD Rom of World Development Indicators (2002), the Barro and Lee Data set, Penn World Tables, the 'States in armed conflict report' and the UNHCR statistical year book 2002. The major source of data for refugee statistics is the global refugee agency, UNHCR. Prior to the 1990s, UNHCR's capacity and commitment in the area of refugee statistics was, by any standard, weak (Crisp,1999) and the fact that the conflict data is also only available from 1989 (from the preferred conflict data source), the time series cover a range of ten years spanning from 1990 to 2000 period to suit these respective data needs.

The study has two sets of data. A data set for the 'single cross section' and a panel data set. Both types of data sets have roughly the same countries and the same variables. The difference between the two is that the former compressed data into one time period, whereas the latter divides the time period into two waves.

After thorough consideration, based on economic theory and intuition, the following variables were identified for possible inclusion into the econometric model.

4.3 DESCRIPTION OF VARIABLES

The variables in this study are explained below as are the reason(s) for their selection. Generally, the choice of variables is determined, firstly, by the economic theory under investigation, intuitive judgment and, finally, by data consideration. In addition to economic reasoning, common sense, as suggested by Wooldridge (2000), has been used as guide for the choice of variables. Wooldridge added that while this approach loses some of the richness of economic analysis, it is commonly and effectively applied by careful researchers. The expectation of the behaviour of the variables in terms of their direction of effect on economic growth is also commented on. In addition to the description given below, table 4.0 has also been provided in the appendix to this chapter which provides an overview of the variables and their sources of data.

Per Capita GDP Growth Rate[5]

The growth rate of GDP is calculated from GDP per capita (constant values) from 1990 to 2000 as follows:

$$\left[\left(\frac{GDP_{2000}}{GDP_{1990}} \right)^{\left(\frac{1}{t} \right)} - 1 \right] x100$$

This provides the real growth rate of per capita GDP at the observed time period. This variable is the dependent variable for the estimation of growth regressions in this study.

Initial GDP Per Capita[6]

GDP per capita is gross domestic product converted to US dollars using purchasing power parity rates. This is then deflated[7] by dividing it by the US inflation index[8] for each year from 1990 to 2000. The initial value (1990) is used for the single cross section and 1990 and 1995 for the two wave panel analyses. This variable is of particular importance in this research for

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[5] This refers to the annual percentage growth rate of GDP at market prices based on constant local currency. Aggregates are based on constants using the US inflation index.
[6] GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources (World Bank, 2000).
[7] To get GDP in constant $, which is GDP per capita current, $ divided by the US inflation index,
[8] Obtained by dividing cgdp by rgdpch in the PWT 6.1 for USA from 1990 to 2000 respectively.

the investigation of the convergence theory. GDP per capita will generally give an indication of what economic initial conditions[9] have been like in the presence of refugees. This variable is expected to enter the model with a negative effect, as predicted by the convergence theory.

Percentage of Refugees

This variable depicts the burden (or benefit) on, and responsibilities of, countries hosting refugees. The variable shows the percentage of refugees per receiving country's population. Table 4.1 is provided in the appendix to this chapter to give an indication of the average percentage of refugees hosted in each of the countries. It is expected that the behaviour of this variable in the estimated results depends on the economic situation of the host country. Therefore, the more refugees a country hosts, the higher the benefit if it is in good economic standing, or, the higher the cost if it is in low economic standing. The real per capita GDP is used as an indication of 'good' and 'poor' economic status of a country.

Absolute Number of Refugees

In addition to the variable of refugee as a percentage of the population, the average of the absolute number of refugees from 1990 to 2000 is also included. This variable will be used alternatively with the percentage of refugee variable. This is in order to ascertain whether the large populations of some countries 'hide' the effects of refugees.

Population Growth Rate

Population growth rate is obtained by calculating the total population from 1990 to 2000. This variable is included to capture the possible effects of unregistered or "self-settled" refugees since the latter might be included in population estimates of developing countries because population censuses are not very common in most of these countries[10]. Population growth rate is a variable which might explain GDP per capita growth and it will have a relationship with refugees as well. Human population is known to grow by two main means. One is naturally by surplus of births over deaths, and the other is through migration. Further, the World Bank (2002) defines total population as being based on the de facto definition of population, which counts all residents who are generally considered part of the population of their country of

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[9] 1990 is the initial condition for all observations except for Uzbekistan and Viet Nam whose initial conditions are 1993 and 1991 respectively, due to missing data for 1990.

[10] See Srinivasan (1994) on latest population census for most developing countries. Most developing countries have not had a population census taken in over 10 years.

origin regardless of legal status or citizenship, excluding refugees not permanently settled in the country of asylum. Population growth rate is also a key variable in the Solow model which is the framework of this study. According to this model, this variable is expected to have a negative effect on growth.

Number of Borders

This is obtained by counting the number of borders[11] for each country in the data set from the World map. It has several uses in the model so it has been classified into three variables. One states the number of borders a country has; the second is a dummy variable that is 1 if a country has any of its neighbours in conflict and 0 otherwise; and the third one looks at the total numbers of a country's borders that are in conflict. This variable has been identified as a likely reason for the concentration of refugees. It will help to explain the reason (if any) why some countries have so many or so few refugees. It is therefore expected that destination countries that are islands (sharing no borders with others) will have no, or fewer, refugees. Source countries with many borders will also be expected to 'send' fewer refugees to any specific destination country since refugees might spread out, but those source countries in the middle (with few borders) will be expected to produce more refugees for any of their few destination countries. All of this is subject to the presence and extent of conflict in a neighbouring country. These three variables, especially the dummy variable of any border in conflict and total number of borders in conflict, will be used alternatively in different specifications. The use of these variables will be limited to the specification examining factors that determine refugee flow rather than their effect on GDP growth rate. They are expected to have a direct relationship with the flow of refugees.

Conflict Situation

The conflict situation is observed over an 11 year period, unlike the other variables which are observed for a period of 10 years, meaning the initial year for conflict is 1989 instead of 1990. This is because of the expected continuous spill-over effect of conflict. For example, a 1989 conflict could possibly continue to produce refugees in 1990, and beyond, if it continues. Conflict is classified into three variables: minor, intermediate conflict and war, all of which

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[11] The number of borders in this study was, however, compared to those in the CIA World Fact Book (2003). It is observed that my data on number of borders is the same as those of the CIA except in the case of Botswana's borders which include Zambia (and vice versa) in my study, but not in the CIA book. This is because borders in my study are used to see nearness for the possibility of refugees flow rather than the length of border.

are dummy variables meaning 1 if a country has a minor, intermediate conflict or is at war[12] and 0 otherwise. This variable has two functions in this dataset. The study uses it to observe the direct costs (in other words, the cost of conflict on conflicting countries) when regressed on GDP growth rate and its spill over effect by looking at the effect of conflict on other countries, indicated not only by the flow of refugees but also on other economic determinant variables. This is expected to be captured by the dummy variables which consider the conflict status of country's neighbour(s).

In order to capture the total effect of years in conflict, an alternative means of coding is also provided; it is listed as minnew, intnew and warnew in table 4.0. What the new coding does is aggregate conflict rather than representing it as a dummy. Thus, a country with 9 years in minor conflict in the period under study will have 9 as the code in minnew and that with two years of conflict a 2. This new coding is expected to reflect a more comprehensive 'total years in conflict' effect since a country with 1 minor conflict, for example, gets 1 and one with 9 also gets one in the dummy variable coding system. The dummy variable system punishes countries with fewer conflicts and favours, by underestimating the effect of years in conflict, those countries with many years in conflict.

Note that the two different coding for conflict will be used alternatively in the estimation. It is already stated that the conflict situation of countries in the data set will be analysed to see how much it leads to refugee flows and how much it affects economic growth both within the countries that are fighting and its neighbours. In addition, an alternative source of conflict data (sipricon-see table 4.0 for source of data) is used in this study to determine whether the result on the effect of conflict is consistent with the use of different sources of data. The coding of conflict in this data set is similar to the coding of minnew, etc. It measures a country's total years of conflict. Total years in conflict, irrespective of the source of data, is expected to reduce a country's per capita GDP growth, increase the flow of refugees and negatively affect economic growth in neighbouring countries.

Trade

This variable considers openness of countries to international trade (sum of exports and imports of goods and services measured as a share of gross domestic product (World Bank

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[12] See chapter one for the definitions of the different types of conflict.

WDI, 2002) and its effects on GDP growth. It is also of particular interest since conflict might affect it significantly. Attention will be paid to ascertain whether trade as a % of GDP is a declining variable when a neighbouring country is in conflict. Trade is expected to produce a positive effect on economic growth. This remains highly debated among economists because the protection of infant industry arguments is highly advocated for development in developing countries[13].

Foreign Direct Investment

The World Bank defines foreign direct investment as the net inflows of investment to acquire a lasting management interest (10 percent or more of voting stock) in an enterprise operating in an economy other than that of the investor. It is the sum of equity capital, reinvestment of earnings, other long-term capital, and short-term capital as shown in the balance of payments. This series shows net inflows in the reporting economy. FDI should have a positive effect on growth.

Human Capital Variables

Human capital variables appear in four forms in this study: the log of life expectancy at birth at the start of each period (1990 for the Single cross section and 1990 and 1995 for each of the two waves of the panel data); the average years of schooling for males, females and the total population aged twenty-five and over who have attained secondary and higher school level at the start of each period; the initial level of illiteracy rate; and school enrolment rate. Each of these variables is described below. However, they are all proxy for human capital and have been interchangeably used in the analyses.

Life Expectancy

Only initial conditions (life expectancy at 1990) are used. Life expectancy is a suitable indicator to control for if one wants to determine whether the life expectancy of residents of a refugee receiving country is increasing or decreasing as a result of the influx. Its relationship with this research links to the crowding of host countries' available facilities, especially health facilities which are a major determinant of life expectancy. Therefore, investigating the effect of refugees requires that this variable is controlled for; otherwise refugees' possible effect on life expectancy would have been omitted. This, in turn, could lead to biased estimates by

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[13] See Trebilcock and Howse (2000).

exaggerating the effect of refugees on growth. Life expectancy should generally be positive on growth.

Illiteracy Rate

The initial condition (1990) of the illiteracy rate has been used. The human capital effect is key in this study. It is expected to be inversely related to growth. A high illiteracy rate is expected to reduce per capita GDP growth; refugees and conflict are expected to positively affect illiteracy rate.

Total Population Average School Year

This variable is a proxy for human capital accumulation and has been widely used in growth regressions[14]. But instead of proxying human capital investment using school enrolment rates like Mankiw, Romer and Weil (1992) did, a measure of the level of human capital[15] will be the average years of schooling here. Data collected by Barro and Lee (1996) provides the average years of total schooling for the population aged 25 and older. The average years of schooling variable is used for examining human capital effect as an alternative variable to illiteracy rate in this data set. Three variables have been selected: average schooling years in the total population[16] (TYR); average schooling years in the male population (TYRM); and average schooling years in the female population (TYRF) for 1990, 1995 and 1999. The traditional view of Development Economics is that human capital accumulation is a fundamental cause of economic growth, and that differences in stocks of human capital across countries are a prime determinant of the corresponding differences in national GDPs. This variable is, therefore, expected to have a positive sign on growth.

School enrolment rate

This variable is alternated with the other 3, explained above, on human capital accumulation. Gross secondary school enrolment is defined as the ratio of total enrolment, regardless of age, to the population of the age group that officially corresponds to the level of education shown. Secondary education completes the provision of basic education that began at the primary level, and aims to lay the foundations for lifelong learning and human development, by

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[14] See Hoeffler (2000) for example.
[15] Please refer to Mankiw, Romer and Weil (1992, P 418) for a discussion of including the level of human capital versus the investment in human capital in the Solow model.
[16] Total population here means 25 years of and above.

offering more subject- or skill-oriented instruction using more specialized teachers. The data on school enrolment rates is perhaps more reliable than that on literacy. However, school enrolment rates do not make provision for the quality of the schooling which might vary within a country (rural and urban areas) and between countries (Srinivasan 1994). Further, the secondary school enrolment rate does not include higher education which might be more important for economic growth. Since this variable is just an alternative to several others, this should not be a problem.

Land Locked

This variable is obtained by examining the world map for countries which do not have access to the sea. An important observation to make about this variable is that it increases the number of borders (which is another variable in this dataset) a country has. Land locked countries face national borders on all sides, a factor which will have two implications for this study. Firstly, it is expected to increase trading partners but then to hinder international trade largely on the affected country because a major aspect of the international trade of land locked countries – import and export -- will be channelled through its neighbours, especially where the use of the sea in such trade is inevitable. Secondly, with more neighbours in conflict, movement of refugees into such countries is expected to increase. This is, therefore, expected to enter the regression with a negative sign.

Gross Capital Formation

This is a variable to capture the effect of the investment rate as a percentage of GDP. Gross capital formation consists of outlays on additions to the fixed assets of the economy plus net changes in the level of inventories. Fixed assets include land improvements (fences, ditches, drains, and so on); plant, machinery, and equipment purchases; and the construction of roads, railways, and the like, including schools, offices, hospitals, private residential dwellings, and commercial and industrial buildings. Inventories are stocks of goods held by firms to meet temporary or unexpected fluctuations in production or sales, and 'work in progress' (World Bank WDI 2002). This variable is also significant for this study since conflict through its diversion effect (discussed in chapter five) might reduce capital formation. Gross capital formation should be positive on growth and a negative effect of conflict on this variable is expected.

Government Consumption

General government final consumption expenditure (general government consumption) includes all government current expenditures for purchases of goods and services (including compensation of employees). It also includes most expenditure on national defence and security, but excludes government military expenditures that are part of government capital formation. This variable will be observed to establish whether it increases in times of conflict and refugee reception. It is expected to show a negative effect on growth. By virtue of the definition of this variable which excludes spending on education or other government capital formation which could be seen as investment, this variable measure the volume of non-productive government spending. Government spending which does not improve productivity is expected to reduce growth. And where corruption is the order of the day, higher losses can be anticipated; a large government is bad for growth since the non-productive spending increases with the size of the government.

Ethno Linguistic Fractionalisation Variables

Alesina *et al* in 2003 have come up with a new measure of Ethno-linguistic fractionalisation now decomposed into thee variables: ethnic, language and religion. Their variable, 'language', is based exclusively on data from Encyclopaedia Britannica, 2001, which reports the shares of languages spoken as 'mother tongues', generally based on national census data. They compute a separate variable for religious fractionalisation, ('religious'), also based on the data from the Encyclopaedia Britannica, 2001. The main variable they focused on is a measure of ethnic fractionalization: 'ethnicity'. The definition of ethnicity involves a combination of racial and linguistic characteristics. As noted in this paper, a major obstacle to distinguish between ethnic and linguistic variables is that language is part of the criterion used by ethnologists and anthropologists to define the concept of ethnicity. This is true, for example, in Africa, where racial or physical criteria are seldom used to define ethnic groups. This is not the case, however, in South America, where characteristics typically used to distinguish between ethnic groups are racial in nature[17].

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[17] The distinctions in the data on 'language' and 'religion' are less controversial, and subject to arbitrary definitions, than the data on language and ethnic fractionalisation, since the boundaries of religions are clearer and definitions consistent across countries.

These socio-economic variables have been included in this study to establish whether they have similar effects on economic growth as observed by previous authors. Of particular importance is to look at their possible (remote) effect on the flow of refugees which might have been channelled through their chances of igniting conflict.

All of the variables discussed above and summarized in table 4.0 are not used at the same time or in the same specification. Key variables -- GDP per capita growth rate, initial GDP per capita, population growth rate, gross capital formation, refugees and conflict -- have been used in different combination with the other socio-economic variables. Other specifications with different dependent variables have also been used. Apart from the main variables (just mentioned) for this study, the selection of most of the other variables is mostly to make results of the current study comparable with previous studies. It is also done with a view to controlling for more variables, which is expected to show a clearer effect of the main variables of interest.

4.4 DESCRIPTIVE STATISTICS OF THE DATA

In this sub-section, a detailed description of the data is presented. The distribution of data for each of the key variables in this study is first presented. This is followed by the description of the 72 observation data set on its central tendencies. The data is also described by regional grouping. Table 1.2 also gives general information by country on some of these variables.

4.4.2   Regional Summary Statistics on Key Variables of the Study

The key variables in this study are real GDP per capita growth, initial GDP per capita, refugee flow, the prevalence of conflict, population growth rate, and gross capital formation. These variables are described by region below, except for the last two variables which are described for the entire data set on table 4.9. The description of the variables is in accordance to how they relate to the study which makes the description different from table 1.2 which offered a general overview of economic development trends in the developing countries under study here.

GDP GROWTH RATE

The growth rate of real GDP per capita has been widely used as an indicator of economic progress in several empirical works. It differs significantly among countries in my dataset. Regional averages are calculated and discussed below.

Table 4.2 Regional Average of the growth rate of real GDP per Capita

REGION	Mean	Stand Dev	Minimum	Maximum	No. Obs
North Africa	1.02	1.52	-0.42	2.87	4
SS Africa	-0.34	2.62	-8.39	4.27	40
Asia	2.27	1.45	-0.31	5.09	14
Latin America	0.61	2.05	-3.42	2.89	14

Source: Author's calculation

Sub-Saharan Africa experienced a negative growth on average between 1990 and 2000, with its lowest growth below an annual rate of -8.39%. This is far below the overall average of GDP per capita growth in this study of 0.43% -- table 4.9. Asian countries in this dataset appear to be doing well comparatively. These performances might partly, determine the effects of refugees on these countries. This means that a country with a better growth rate is less likely to suffer with the influx of refugees. An examination of the next indicator (initial GDP per capita) in which Latin America ranks first among the other regions questions the growth rate indicator in which this region ranks third, suggesting that these indicators do not show, in themselves, the true economic situation and possible effects of refugees on these countries until they are used in combination with other economic development indicators.

GDP PER CAPITA

The initial conditions, which in this case are GDP per capita in 1990 for all countries selected, are summarised below. This variable is grouped with regional averages.

Table 4.3: Regional Average of Initial Real Gross Domestic Product per Capita

REGION	Mean	Stand Dev	Minimum	Maximum	No. Obs
North Africa	3966	1052	2884	5175	4
SS Africa	1977	1976	511	9520	40
Asia	2149	1229	1015	4457	14
Latin America	4980	2263	1883	8875	14

Source: Author's calculation

Looking at this table, it could be concluded that Latin America is the richest region closely followed by North Africa. Asia is next with Sub-Saharan Africa faring worse. This description is specific for countries in my data set but, in fact, could be generally true for some regions. For example, 40 out of 47 countries in sub-Saharan Africa are included in this study. The

essence of this description is closely linked with the issue to be investigated in this study. One can, therefore, infer that if refugees have a negative effect on developing countries, they might be better off in Latin America than either in North Africa or Asia. Conversely, if the effect is positive, refugees will be expected to be more productive in Latin America, than North Africa, and in Asia rather than Sub-Saharan Africa, since economies in these regions are already relatively wealthy. However, with the desire to investigate the convergence theory of the Solow growth model in this study, Sub-Saharan Africa will be expected to grow faster since its initial GDP is lower than all other regions. Note that the average per region might have been largely influenced by the range (economic terms) of countries included for each region and the total number of countries. Even though it is true that sub-Saharan Africa has a lower average in several, if not all, empirical works, the fact that it has more countries (with negative growth) per region in this study might further reduce its average.

REFUGEES

The effect of refugee flow on developing countries is observed by first looking at the relative figure of refugees in a particular country. This was done by calculating the percentage of refugees in the population. The result is shown in the table[18] below grouping the countries into convenient ranges.

TABLE 4.4: Number of countries in each region and the percentage of refugees

Percentage	North Africa	SS Africa	Asia	S. America
0%	2	6	3	6
0.01 - 0.9%	2	22	9	7
1 – 5 %	0	11	1	1
5 -10 %	0	1	1	0

Source: Author's calculation

6 countries[19] in sub-Saharan Africa have no refugees. The economic progress of these countries has been observed to establish whether their lack of refugees puts them in a better position than refugee receiving countries. 3 countries in Asia[20] and 6 countries in Latin America[21] show zero percentage of refugees hosted but most of these countries have been in conflict, so they must be 'refugee producing' countries. This makes them relevant for this

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[18] Table 4.1 in the appendix to this chapter also gives information on the average percentage of refugees hosted by each country in the dataset for the decade and also for the two 5 year periods.

[19] These are Comoros, Cape Verde, Mauritius, Mozambique, Lesotho and Madagascar. Note that the last three countries have 233, 66 and 18 refugees for the decade average in absolute terms but the percentage of refugees shows zero because of their (especially Mozambique's) relatively large population.

[20] There are Cambodia, Laos and Sri Lanka. Only the last country has a (almost) negligible amount of refugees:20.

study. 22 countries in sub-Saharan Africa, 2 in North Africa, 9 in Asia and 7 in Latin America have up to 0.9% (about 1% of refugees) of their population constituting refugees. For countries whose population consists of 1 to 5% refugees, 11 are found in sub-Sahara Africa and 1 in Asia and 1 in Latin America. The highest range of percentage of refugee per populations is 5 to 10%. There are two countries within this range one in sub-Sahara Africa and the other in Asia[22]. The decade average of the percentage of refugee for every country is shown on table 4.1 but also summarised for all regions below:

Table 4.5: Regional average of refugees as a percentage of the population

REGION	MEAN (in %)	Stand. Dev.	MINIMUM	MAXIMUM	No. Obs
North Africa	0.17	0.33	0	0.67	4
SS Africa	0.90	1.41	0	7.9	40
Asia	0.50	1.23	0	4.58	14
Latin America	0.22	0.52	0	1.93	14

Source: Author's calculation

This table shows that, on average, there are at least 1% of refugees in all regions, with Sub-Saharan Africa and Asia carrying the greater burden -- see the maximum for these regions. This supports the information shown in figure 1.2 in chapter 1.

The percentages of refugees per population, according to the averages in table 4.5, are too small considering that some countries do receive large numbers of refugees. There are two possible reasons for this: one is a 'population effect'[23] and the other is the 'decadal averaging' or data dynamics. Some countries[24] have a huge population so even though they have many refugees in absolute terms, the percentage is relatively small. Similarly, the decadal averaging effect shows up when a country has many refugees at some point during the 10 year period and fewer refugees at other points[25]. Therefore, both the population effect and decadal

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[21] These are Haiti and Trinidad and Tobago, Columbia, Ecuador Peru and Paraguay. With the exception of the first two countries, the rest have 298, 373, 664 and 49 refugees respectively. The population of these countries have made the number of refugees negligible in percentage terms. This is why it is important to include the variable of absolute number of refugees.

[22] These countries are Guinea for sub-Saharan Africa and Iran for Asia. They have 7.85% and 7.35% of refugees respectively.

[23] This occurs where the percentage of refugees becomes smaller not because there had been fewer refugees but because the host country population is very large. Suggesting that the percentage of refugees depends a lot on the total population in a country in addition to the absolute number of refugees.

[24] Mentioning some regional examples, Nigeria with a total refugee population of 6,318 shows a zero percentage of refugees. Equally so, India with 202,109; Pakistan with 1,678,453; have about 0.02 and 1.41 (even less than 2%) of refugees. Also, Argentina and Costa Rica in Latin America have about 8,764 and 61,745 just to come up with a percentage of 0.03 and 1.93% of refugees.

[25] Taking few examples, Costa Rica had a Percentage of 9 refugees in 1990 and about 4 in 1991 and 1992 but the total average fell to a 1.9 for the ten year period. An even more drastic example is the case of Malawi which had

averaging can reduce the total percentage of refugees. These two effects are serious problems that might affect final results of the single cross section estimation. This is a very strong reason behind the further consideration for using the panel data method which uses averages for shorter periods. See methodology discussed in the chapter two.

ABSOLUTE NUMBER OF REFUGEES

This variable indicates the total number of refugees a country receives in a year. What we see in the table below is an average by region. This average is further calculated from the individual decadal average per country.

Table 4.6: Regional average of total number refugees (1990-2000)

REGION	MEAN	Stand. Dev.	MINIMUM	MAXIMUM	No of Obs
North Africa	48,157	92128	242	186,300	4
SS Africa	98,673	163926	0	622,936	40
Asia	347765	795011	0	2,650,409	14
Latin America	19,257	36864	0	122,573	14

Source: Author's calculation

According to the table above, 4 North African countries have on average from 1990 to 2000, about 48,157 refugees. Equally so, countries in sub-Saharan Africa have 98,673 refugees with Asian and Latin American countries having 347,765 and 19,257 respectively. It could not be easily determined that Asia's share of the refugee burden or benefit is greater than Africa's (though this is what the table shows) since the average is spread over the total number of countries and the latter region has far more countries than the former in this study of which some of them are not refugee hosting countries. However, the figures in table 4.6 for Asia further supports the figure showing the regional share of refugees in chapter one. Even though these figures should not be interpreted to reveal who carries the heaviest burden, they do offer a glimpse about the distribution of refugees. Table 4.6 also shows that there are countries in Sub-Saharan Africa, Asia and Latin America which have no refugees, indicated by a minimum of 0, while Asia hosts the highest total number of refugees.

CONFLICT SITUATION

The dataset with 72 countries shows that 47 countries have at least one conflict, which means that there are 25 countries without any conflict. There are 32 minor conflicts, 23 intermediate

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a percentage of about 8 to 12 refugees in the early 1990s but far too lower percentage (even less than 1) in the late 90s resulting in its lower decade average of about 4%.

conflict and wars. A country can have a minor conflict, an intermediate conflict and a war in different years during the study period. Some countries have all types of conflict during the period of study, with some having different forms of conflict within the same year. This is why 32 minor conflicts do not mean there are 32 countries with minor conflicts. For example, India had 5 minor conflicts in 1989, Ethiopia 3 in 1996, Senegal and Niger 2 each in 1990 and 1997. The number of conflicts in a region will not tally with the number of countries because a country can be in more than one type of conflict at the same time, a factor which increases the number of entries for the region. For example, North Africa has 3 countries in conflict but states 4 total conflicts because Algeria had a minor conflict as well as war during the study period.

TABLE 4.7: Number of countries in conflict per region 1989-2000

	North Africa	**Sub-Sahara Africa**	**Asia**	**America**	**Total**
No conflict	1	20	2	2	25
Minor conflict	2	16	7	7	32
Intermediate Conflict	1	8	9	5	23
War	1	12	6	4	23
Total regional conflicts	4	32	22	16	

There are 25 out of 72 countries with no conflict; 20 of these 'no-conflict' countries are from sub-Saharan Africa, 1 from North Africa and 2 from Asia and Latin America each. There were 32 minor conflicts in total, of which 50% (16 out of 32) were fought in sub-Saharan Africa, 6% in North Africa, while Asia and Latin America experienced about 22% each of the total minor conflicts in this study. Out of the 23 intermediate conflicts, 35% were experienced by Sub-Sahara African countries, 4% by North Africa and 39% by Asian countries. Latin America suffered 22% of all intermediate conflicts. Asia, with much fewer countries in the dataset than sub-Saharan Africa will be more likely to suffer from intermediate conflict effects. With a total of 23 wars in the developing countries, 52% took place in Sub-Saharan Africa, 26% in Asia, 4% and 17% in North Africa and South America respectively. We see the exact reverse of intermediate conflict between sub-Saharan African countries and Asian countries. However, if, as suggested in this study, war has a strong negative effect on per capita growth, then Sub-Saharan African countries will suffer more from conflict than Asia since the former ranks higher on war whereas Asia instead ranks higher on intermediate conflicts.

It should not be surprising that there is only 1 country in North Africa with no conflict since there are very few countries in this region. Similarly, since countries in Asia and Latin America were selected on the basis of having conflicts, it is also not a surprise that there are only 2 in each region, Thailand and Vietnam in Asia and Argentina and Costa Rica in Latin America, without conflict. Since the number of countries chosen per geographic zone differs, it makes nominal interpretation difficult, the use of percentage share of conflict above allows for a better comparison.

Conflict is represented as three dummy variables in this study. It has also been iterated that a country can be in minor, intermediate conflict or at war. Some countries[26] even experience all the three types of conflict at different times of the study period. It is expected that the intensity of the conflict[27] has a positive relationship with the 'production' of refugees but an inverse relationship with growth rate of GDP. Therefore, a direct relationship is expected between the type of conflict and the number of refugees generated. With this in mind, Africa would be expected to have more refugees, irrespective of the fact that it has the largest amount of countries in the data set. This is so because that region has the majority of countries which have experienced war. This is, however, not consistent with the data in this study since in fact it is Asia that has the highest maximum of the total number of refugees and also the highest average of total refugees in the period – see table 4.6. This divergence could be linked with Asian countries' huge population; so that refugee-induced factors produce more refugees in Asia (in absolute terms) than the same factors will do in other regions.

NUMBER OF BORDERS

This variable shows the number of borders a country has. To a large extent some of them refer to the closest border a country will have especially for Indonesia. However, no borders have been recorded for most island countries since most of them are relatively far from their nearest neighbours.

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[26] Typical examples include Burundi, Ethiopia, Sierra Leone, India, Pakistan, the Philippines, Colombia and Peru.
[28]Types of conflict indicate the intensity.

Table 4.8: number of borders

	N. Africa	SS Africa	Asia	America	Total
No bordering country	0	4	1	0	5
1 to 4 borders	3	19	8	12	42
5 and more	1	17	5	2	25

This table shows that there are no island countries in North Africa and Latin America within my dataset; outside of it, the 4 sub-Saharan Africa and 1 Asian country with no bordering countries are actually islands. The majority of countries in all regions have between 1 to 4 neighbouring countries. A few have number of borders between 5 to 9 borders. A more detailed summary of statistics on the number of borders by region is shown in table 4.8.2 below:

Table 4.8.2: Regional average on number of Borders

REGION	MEAN	Stand. Dev.	MINIMUM	MAXIMUM	No of Obs
North Africa	3	1.89	2	6	4
SS Africa	4	2.33	0	9	40
Asia	4	1.99	0	7	14
Latin America	3	1.33	1	5	14

The average numbers of borders have been rounded up to the nearest whole number since it makes no sense to have a 'half-border'.

A key reason for using this variable is because it enables an examination of its effect on the flow of refugees as already mentioned. It is important to note that the number of borders a country has does not necessarily suggest the magnitude of refugee influx. Indeed, the state of conflict of the neighbouring country/ies is expected to be a more important factor to look at. For example, a country with one border whose bordering neighbour is in a war situation (Lesotho[28]) is expected to be more at risk of receiving many refugees than one with, say, four borders each of which has no conflict or is in a minor conflict state, as in the case of Benin[29]. The data under study seriously undermines this proposition. It turns out that Lesotho has, on average, 66 refugees and Benin has 24,675 refugees. This may suggest that conflict may not be the only reason for the flow of refugees; it might also point to the possibility that refugees consider several other factors in addition to safety before flight. This is so if we consider that refugees from Lesotho's border, South Africa, might as well decide to stay within relatively safer regions of their country of origin rather than move to a lesser economically developed country like Lesotho or, they might move to other bordering countries (like Namibia,

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[28] South Africa had 6 years of war but this country has five other borders.
[29] Countries sharing a border with Benin include Burkina Faso, Niger, Nigeria and Togo. The last three countries have been in minor conflict for very few years.

Botswana or Swaziland) with relatively better economies. This may not apply to Benin although its average per capita GDP is slightly above 3[30] of its four neighbours; Togo, another neighbouring country has a higher per capita GDP yet refugees in Benin came from Togo. This reminds us that high GDP is not an 'end' in development. Whether refugees consider economic conditions of destination country or security is a matter of empirical interest for this study. What ranks first on the scale of preference (safety or economic prospects) will also be investigated in chapter 6 of this study.

In addition, having a neighbour and being in conflict yourself may prevent refugees flowing into your country. This partly explains a possible reason why most of the refugees from Sierra Leone in the 90s went to Guinea instead of Liberia. Needless to say, there are additional factors responsible for this; as could the fact that some countries are not listed as having conflict due to definitional reasons. In this scenario, then, a country could be in conflict in real terms but because it does not meet the definitional requirement of number of 'battle-related death' according to the states in armed conflict report (which is my source of conflict data) it is also not recorded as being in conflict in this study. This will, in reality, impact on the flow of refugees to such countries. Nigeria's[31] religious conflict in the North might frighten refugees from going there; such conflicts can have serious economic implications, especially if they take place in and around economically vibrant regions of the country.

Morocco shares a border with one European country, Spain, the latter of which is not part of my study area. This bordering country is in a minor conflict but it is not expected that refugees will flow from Spain to Morocco because it is only experiencing a minor conflict and due to economic reasons which would act as a deterrent. This case is an exception because most of my countries are bordering with other developing countries.

The sub-section 4.4.2 has described the data for this study by regional distribution. The next section will now describe the data when all observations are grouped as a single period.

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[30] Average per capita GDP for Benin is $925, Niger $697, Nigeria $837, Burkina Faso $912 and Togo $1348. The last 4 countries are Benin's neighbours.
[31] Nigeria however has one minor conflict in 1995 which is the conflict for the Bakasi region between Cameron. But Nigeria is not listed as having an internal conflict.

4.4.3   General Summary Statistics

If we consider economic model builders as producers of commodities and the users of the models as consumers, it is worth remembering that consumers usually prefer to have a choice. It is rare for one model to be superior for all possible purposes: forecasting, policy making, conditional forecasts, testing hypotheses, or investigating the effects of a previous policy change, for example. Different users will have different tastes, beliefs, and needs, and will prefer certain types of models. Clearly model providers will have to produce the models and relevant summary statistics allowing model consumers to make sensible choices between them (Granger, 1999). This section will follow this sound judgment and produce relevant descriptive statistics of variables for the entire study. The value of descriptive statistics is that they give an efficient summary of some type of information. Several variables, believed to determine economic growth have been selected, and data has been collected for a total of 72 countries in Africa, Asia and Latin America. Most of these variables have been extensively discussed in the growth literature (like initial per capita GDP, growth rate, investment, landlocked, population growth, etc). In this section, special emphasis will be on variables that are, to the best of my knowledge, new to the growth literature, and which are of particular interest here. The two key variables of interest are refugee flows and conflict[32] statistics; their effects on GDP per capita growth have been investigated. The initial GDP per capita is also important according to theories of economic growth especially those testing for conditional convergence hypothesis. Variables expected to determine the flow of refugees, especially the number of borders a country has, the conflict situation of those borders are also discussed.

This section will give a simple description of the range of data for this study. Variables are described especially by their means as shown on table 5.1 below;

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[32] It is important to point that the use of the conflict variable in growth regressions is not unique to this study. Collier (1998), Hoeffler, (2000, 2001), Collier and Hoeffler (1998), Elbadawi (1999), Elbadawi. and Sambanis (2002) and many others had already laid foundation in this line of research. However, the data set on conflict used in the current study is different from what previous authors have used.

Table 4.9: Descriptive statistics of the variables

	Variable	Mean	Standard Deviation	Minimum	Maximum	Observation
1	Gdpgr	0.43	2.46	-8.39	5.09	72
2	gdpini	2704	2207.63	511	9520	72
3	Perref	0.65	1.23	0	7.85	72
4	Absref	128859	379199	0	2650409	72
5	Popgr	2.32	0.58	0.69	3.46	72
6	nobord	4	2.08	0	9	72
7	anbdcon	0.87	0.34	0	1	71
8	totbdcon	1.97	1.38	0	6	70
9	mincon	0.43	0.50	0	1	72
10	Intcon	0.31	0.46	0	1	72
11	War	0.32	0.47	0	1	72
12	confdum	0.61	0.49	0	1	72
13	openess	64.66	28.83	19	165	71
14	Fdi	1.95	2.44	-1.86	14.12	71
15	Life Expe	56.67	9.68	35	75	72
16	loglixp	4.02	0.17	3.56	4.32	72
17	Illitini	41.16	23.30	4	89	68
18	tyr90	3.50	1.85	0.55	7.77	53
19	tyrf90	2.95	2.05	0.27	7.74	53
20	tyrm90	4.07	1.72	0.84	7.79	53
21	lalockt	0.24	0.43	0	1	72
22	grcapfom	20.33	6.88	7	55	71
23	govcons	13.48	5.29	5	36	71
24	Gfdi	2.88	2.77	0.02	14.11	55
25	Ethnic02	0.55	0.25	0	0.93	72
26	lang02	0.51	0.32	0	0.92	72
27	relig02	0.43	0.26	0	0.86	72

See table 4.0 in the appendix for definition of variables

The annual growth rate (averaged over the ten year period 1990 to 2000) of real per capita GDP is about 0.4% for the entire 72 countries in my dataset. Some countries are characterised by a decline in GDP growth rate which is not surprising for most developing countries. The lowest growing economy has a growth rate of -8.39% and the maximum growth rate is recorded at 5.09% for the fastest growing economy[33] in this study. The average initial level of per capita GDP for the countries is approximately $2705, with the lowest country[34] having just about $500 and the highest[35] $9520. On the whole, countries in this study host, on average 1% of refugees. However, this figure ranged from having no refugees to having about 8% for few countries. The average population growth rate was 2.3% for a range of 0.7 to 3.5%.

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[33] Congo D.R. emerged as the lowest growing economy, closely followed by Sierra Leone with –8.39 and -7.76% GDP per capita growth rate. Vietnam is the fastest growing economy in this data set.
[34] Malawi.
[35] South Africa

Further, countries in this dataset have approximately four neighbours. There are a few countries with no borders, all of which are island countries, and there is one country that has 9 borders. On average, each country has at least one neighbour in conflict. Life expectancy at birth ranges from 35 to 75 years with the average being 57 years. With an average of 41% of illiterate population, Niger has 89% illiterate rate, whereas just 4% of Argentina's population is illiterate. The next section will provide detailed descriptions of selected variables deemed more important for this study.

4.4.4 Predicted/expected signs of variables

Economic models that express relationships between economic variables also involve questions concerning the signs and magnitudes of unknown and unobservable parameters. Below is a table indicating the expected signs of the variables. The magnitude can only be indicated after the econometric analysis has been carried out; interpretation will be based on personal judgment with reference to theory and intuition.

Table 4.10: Expected signs of variables
(Dependent variable is the growth rate of GDP per capita)

VARIABLE	EXPECTED SIGN
Initial GDP per capita	-
Population growth	-
Refugee population	-/+
Conflict situation	-
Trade as a % of GDP	+
Foreign Direct Investment	+
Life Expectancy	+
Illiteracy rate	-
Total Population ave. schl	+
Landlocked	-
Gross Capital formation	+
Government Consumption	-
Ethnolinguistic Fractionalisation Variables	-

All sub-sections in section 4.4 deal with the description of the data set. Data on key variables has been described by regional distribution as well as for the entire study. Anticipated signs of the variables have been identified. However, before presenting results, I would like to discuss pertinent issues about data on some key variables of this study. This is important as background information on the estimated results in the chapter that follows.

4.5 PROBLEMS OF (SECONDARY) DATA COMPILATION

The data for this study was originally intended to include 83 countries across the developing regions. As a result of missing data (discussed below) for some of the originally selected countries, the number of observations reduced from 84 to 73 for most of the variables. There are very few variables (total years of schooling, illiteracy rates, etc) with less than 73 observations indicating further problems of missing data. In this sub-section, I discuss two main problems of secondary data: missing data and reliability of data.

4.5.2   Missing Data

At the very initial stage of the study, collecting data posed a serious problem that might affect the results of my estimation. Missing data is a particular problem in working with statistics on developing countries. The vast majority of countries do not provide information on most of their socio-economic activities. Where data is missing, we can often do no better than to record the item as 'missing' for the case. Missing values are no problem when this is foreseen[36] (Swift 1996). However, where values are missing for other reasons, they can be a problem. If data is missing for an observation on either the dependent variable or one of the independent variables, then the observation cannot be used in a standard multiple regression analysis. This is because, as Little and Robin (1987) observed, statistical packages typically exclude units that have missing value codes for any of the variables involved in an analysis. This strategy is generally inappropriate, since the investigator is usually interested in making inferences about the entire target population, rather than the portion of the target population that would provide responses to all relevant variables in the analysis. This suggests that there can hardly be any regression estimated on variables which will include developing countries as observations because this is a typical problem of data on these countries. Although my data set is not an exception to this problem, averages of the observation period (1990 to 2000) are used to allow the inclusion of many countries and in some specifications, observation size will reduce since data might not be available for any of the years of the observed period to allow for the use of an average. Specifically, about 20 to 26 variables have been identified to be estimated and some of them[37] do not exhibit a missing data problem, by virtue of their nature.

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[36] This is usually possible with primary data collection, for example, where a question is answered only by those in paid employment, for example, and, it is, therefore, not answered by anyone who is not in paid employment.
[37] Other variables either do not have a missing data problem or a 0 does not indicate missing data. They include, population growth rate, refugees per thousand of population, number of borders, borders in conflict, number of border(s) in conflict, all conflict dummies, life expectancy, and being land locked.

Out of the 84 countries originally selected, 11 (highlighted in table 4.12 in the appendix) show acute problems of missing data and have, therefore, been deleted for the final analysis. It is important to note that missing data can pose serious problems for the estimated results. In the first place, they could introduce measurement errors. Thus, any country with more than two years of missing data in any variable has been dropped from the analysis.

All 11[38] bolded countries are automatically deleted because of missing data on GDP per capita value. A country that does not have the dependent variable could not be included in the final analysis. However, 'unbolded' countries will enter the estimation data set since they might just be missing data in one, or at most, two variables. The total effect is that some specification will have a slightly lower number of observations.

One of the objectives of this research is to compare the economic condition of countries with refugees and those without refugees. This might be a difficult thing to do if most of the countries without refugees (which are in the minority especially for Africa) do not have data available for most variables, especially for the dependent variable. Typical examples in my dataset are Sao Tome and Principe, Seychelles, Laos and Myanmar. However, we still have Cape Verde, Comoros, Mauritius, Haiti and Trinidad and Tobago which have no refugees but have data for the dependent variable; so deleting the mentioned countries is not such a big problem. Analysis could also be made through comparing countries with 'fewer' refugees and those with more if this problem persists. Therefore, this objective, irrespective of missing data problem, remains valid for the study.

The main purpose for discussing missing data is to point to the fact that more countries were originally identified for inclusion, and especially to highlight that most of the countries deleted have hosted huge numbers of refugees and or experienced conflict. Their exclusion might leave others wondering about this. Liberia, Djibouti, Eritrea, Somalia, Afghanistan, and so forth, would have all been very interesting for this study. Unfortunately, missing data is beyond the control of the researcher. In fact, the total number of countries did also reduce to

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[38] Libya, Djibouti, Eritrea, Liberia, Sao Tome and Principe, Seychelles, Somalia, Sudan, Afghanistan, Myanmar and Tajikistan. These countries can be conveniently dropped since they repeatedly lack data on other variables as well. Other sources of data were also consulted (namely the PWT 6.1 and the World Development Report) but did not prove helpful for data on these 11 countries either.

72 in the end. The deletion of the 73rd country, Equatorial Guinea[39], stems not from missing data but due to the fact that data on this country was significantly different from the rest of the observations: a situation referred to as an 'outlier'. Outliers are likely to affect the consistency of results; hence, they are normally thrown out.

Although the problem of missing data can be observed and sometimes measures can be put in place to take care of this problem, or the observation deleted, a more serious problem of secondary data beyond the control of the researcher is that of data reliability. Unreliability of data is sometimes no fault of the data collecting agency but related to the nature of the variable on which data is being collected. In the next section, a discussion on reliability of refugee data and some key variables of the study is presented. The aim is to indicate consciousness of possible problems with the results which might be related to data irregularity. This is also meant as information for the reader that reliability of data on economic analyses, in general, is questionable and the study does not intend to overlook or suppress such vital information.

4.5.3 Reliability on Refugee Data

It is surprising to see researchers relying on refugee figures without even pointing out the contradictions.   (Kibreab 1991:13).

Working with data that is not collected by the researcher calls for greater caution in interpreting results. These problems are not unique to secondary data, sometimes problems arise even with primary data. In this section, I wish to discuss problems of data on key variables used in this study which might affect the results of my estimation. Even if they do not, such background is needed to cast proper light on the results discussed in the next chapter. Much reference is made to an article written by Crisp (1999) in writing this section. This article examines the centrality of statistics in the field of refugee studies. It questions the source and accuracy of refugee data and offers reasons for unreliability of such data.

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[39] The growth rate of per capita GDP in this country is observed to be extremely higher than the rest of the countries in this study. This is owing to the discovery of oil fields which increases GDP per capita growth rate beyond the 'normal' growing rate. Real per capita GDP in Equatorial Guinea rose from $1209 in 1990, almost doubled by the middle of the decade (1996: $2225) and went up to $14087 by the end of the decade. The country then has over 100% per capita GDP growth rate for the decade which is an extraordinary trend for all other countries in the study.

First, however, let me begin with the words of Kibreab (1985:10): "any figure in relation to the number of refugees must be treated with caution. Not that I believe, as many others do, that African governments deliberately exaggerate the number of refugees in order to receive assistance, but mainly because refugee statistics, like African population statistics, are bound to be grossly unreliable. I cannot with certainty claim that African states do not inflate refugee numbers in order to dramatise the problem, but no one can by the same token state that the figure submitted by host governments are not underestimations of the actual number of refugees involved. Statistical ignorance is like a double-edged dagger, i.e., it cuts both ways. Though the natural trend in such a situation is to exaggerate, it cannot be taken for granted nor can the opposite be presumed not to exist".

Of greater concern is the fact that the main source of international refugee data itself has come under serious criticism. While refugee statistics are recognized to be an essential part of UNHCR's overall international protection function, it was not until 1993 that the office created a post of statistician to improve the overall collection, compilation and dissemination of refugee statistics (Crisp, 1999).

Arguably, one of the main challenges in compiling global refugee statistics is to reconcile data from developing countries. Thus, the available data on developing countries concerns largely prima facie refugee populations that arrived as part of a mass inflow and, who are located in camps (Standing committee 13th meeting). Crisp cautioned that, if it has proved so difficult for the industrialized states to provide a comprehensive statistical picture of the refugees on their territory, then it should come as no surprise to discover that refugee statistics in developing regions of the world are also lacking in detail and reliability. Adepoju (1989) added that accurate estimates of refugee populations (and internally displaced persons) in Africa are hard to come by. Indeed, few African countries have accurate information on their own populations.

While statistics are central to the functions of the international refugee regime, it has long been recognized that the collection of accurate data on displaced populations is confronted with some formidable obstacles. Writing in 1995, for example, Kibreab pointed out that there is a cloud of uncertainty and unreliability surrounding African refugee statistics. Six years later, a report issued by the US State Department's Bureau for Refugee Programs noted that

counting refugees is at best an approximate science (USCR 1991). In addition, a published international Labour Office volume on the collection of international migration statistics observes that much of the information available on refugees and persons in need of protection is tentative at best (Bilsborrow et al 1997).

These are instances that suggest that, indeed, there is a cloud of uncertainty and unreliability surrounding refugee statistics. Arguments in favour of refugee receiving countries' tendency to inflate refugee figures are very common among most writers who have criticized refugee statistics. There is good reason to believe that the over-estimation or under-estimation of refugee figures may not only be a deliberate act. Some practical difficulties may be associated with the process of refugee data collection. These I will discuss below.

Economics problems: Most developing countries lack the economic capacity to host regular censuses for their national populations, and, therefore, consequently, for refugee statistics. Limited funds would rather be used for current consumption than for census purposes. As also noted by Crisp (1999), many of the world's largest refugee and returnee populations are now to be found in poor and unstable states such as Guinea, Liberia, Sierra Leone and Congo, DR. In such societies, the authorities simply do not have the capacity to collect high-quality refugee statistics.

Definitional problems[40]**:** The definitional differences, made strictly on legal terms, are irrelevant in terms of human needs and humanitarian assistance. However, they are worth taking into consideration when undertaking statistical analysis of refugees.[41] The definition of who a refugee is varies from region to region. However, there is an international definition enshrined in the 1951 UN Convention that seems to be the guiding force in deciding who a refugee is. It is to this definition that other regional instruments/organizations add a supplementary clause. Refugee data for this study, collected by UNHCR, uses the international definition in addition to the regional clauses like the 1969 OAU convention definition. The definitions are stated in chapter one.

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[40] For more details, see Crisp 1999
[41] Crisp 1999 lamented that scholars and journalists who make use of USCR (United States Committee for refugees) and UNHCR figures almost invariably fail to recognize definitional differences between the two refugee organisations.

Refugee figures may also be incorrect because the countries of origin may underplay the statistics to avoid presenting an alarming the situation and giving an image of incapability to protect its citizens. At the same time, the countries of origin are inclined to exaggerate returnee numbers since this manifests citizen's confidence in the government's capability to protect their lives and properties. This may not have posed serious data problems especially for refugees because it is UNHCR, other agencies and some times government officials of the country of asylum that take refugee statistics. The countries of origin hardly have any thing to do with these figures (See section 4.6 of this chapter).

A more likely situation that affects the correctness of refugee statistics is the host countries' contribution to the collection of data. It has been widely argued that developing countries of asylum do exaggerate refugee figures, a view which Kibreab (1985) is highly sceptical of, as shown on the previous page, for various reasons. According to Crisp (1999),

a. this is done, firstly, to embarrass the government of the country of origin and tarnish its human rights records;

b. to provide employment for bureaucrats and refugee camp workers;

c. to maximize the amount of foreign exchange brought into the country by humanitarian agencies;

d. to cast as favourable a light as possible on the country's commitment to humanitarian norms; and

e. to bolster its international reputation and external support.

Points b to e are highly plausible. It is almost always the case that if host countries exaggerate the number of refugees they might be doing so for one or more of these reasons. Host countries might have additional relevant reasons for inflating refugee figures in addition to reasons stated above. Mainly, they may be doing this to avoid fatal insufficiency, which means that when they anticipate more refugee influx, they therefore need contingency plans to take care of emergencies of further influx. It may also serve as a means of compensating locals who might have helped the refugees before international humanitarian intervention. In this case, whatever will be distributed to the refugees will also reach the local population.

Another eminent problem affecting reliability of refugee statistic is that, in most countries, there is more than one source[42] for statistics, complicating the compilation of statistics at the national level. Actors[43] involved with refugee situations, normally the sources of refugee statistics, may have different reasons for under- or over-reporting refugee figures.

Further, the very nature of refugee movement serves as a hindrance to obtaining reliable data. In emergency situations, it is often not possible to provide a reliable estimate owing to the ongoing nature of the influx. Most refugee influxes in developing countries are characterized by emergency situations. In these cases, refugees may enter a country of asylum at different points along the border. They may cluster at one particular point and the large influx will affect registration procedures. In some cases, they may enter at a point unsafe for UNHCR staff (or the agency concerned) to undertake any census activity.

Furthermore, statistics can become quickly outdated as a result of sudden new arrivals or repatriations, births, deaths, and so forth. Numbers fluctuate rapidly as new refugee flows emerge and others repatriate (Adepoju, 1989). This may also arise because in large-scale refugee situations, camp populations are often fluid, that is, they move in and out of camps, often without notifying UNHCR or the local authorities. Since increases in the refugee population are generally better recorded than decreases, there is a tendency, both in more developed countries and in countries where refugees are assisted by UNHCR, towards over-estimation of refugee numbers.

Significant forced displacements may go un- or under-reported. This is common for refugees who settle on their own[44]. Adepoju (1989) estimated that about 60% of refugees in Africa live outside organized camps and are widely scattered amongst local populations. Additionally, as the emergency phase fades away, locals may be tempted to register as refugees who are normally not different from the refugees by any indication (especially socio-economic status). Again, where refugees cross an international border in both directions (Liberians to Sierra

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[42] It may be the government, UNHCR, NGOs or a combination of these.
[43] Classified by Crisp (1999) as countries of origin, countries of asylum, donor states, refugee populations and humanitarian organizations.
[44] Because most refugees relocate spontaneously among local populations thousands of refugees go unnoticed because of Africa's traditional hospitality.

Leone and Liberians to Ivory Coast and vice versa), it can be very difficult for UNHCR or any agency concerned with counting refugees, to place any statistics in the public domain.

Crisp (1999) concluded that the collection of accurate and consistent refugee statistics is an extremely difficult task. A wide range of practical obstacles stand in the way of effective registration and listing. At the same time, because of the way refugees impinge upon the interests of host countries, countries of origin, humanitarian agencies and other actors, refugee statistics will always be a source of controversy and dispute. Therefore, except where it is not urgent but speculative, controversy on data should not deter a researcher from undertaking an empirical study.

Critical analysis on conflict data follows on from critical analysis of data on refugees. Conflict data from the 'States in armed conflict report' published by the Department of Peace and Conflict studies at the University of Uppsala has fewer issues to raise. This is not because much confidence is imposed on an academic research institute, but because of the nature of the issue the institute conducts research on. It is difficult, if not impossible, for a country to make up a story on having a conflict. It becomes evident to all when a country is in a conflict situation. However, a particular point to query the reliability of this data is on the measurement of conflict: 'battle related death'. Rather than dismissing out of hand validity of battle related death as an instrument to measure the magnitude of the conflict, it is important to be attentive to the questionable collection and reliance on such information. Who actually counts the dead in times of conflict when everybody is expected to be fleeing? At best, this is an approximation from different sources which are then compared and a decision later taken.

Generally, data on developing countries is questionable on almost any aspect; most data, even some of those provided by the World Bank are based on projections. It is important to realise that the phenomenon of unreliable population statistics is widespread in most African countries, even regarding non-refugee populations[45] (Kibreab, 1991). Unreliability or unavailability of data in developing countries is not limited to refugees and conflict variables in this study. The study, like it predecessors, uses data on socio-economic variables whose reliability remain contested among academics as well as practitioners. The concern that

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[45] On the problems of the reliability of official statistics in Africa see Remmer (1988), and Volume 44(1) of Journal of Development Economics (1994).

analyses based on unreliable and biased data could result in seriously distorted, if not altogether wrong, analytical and policy conclusions led to a conference on Data Base for Development Analysis at the Economic Growth Centre at Yale University in 1992 (Srinivasan, 1994: 2). The proceedings of this conference were edited by Srinivasan (1994) and published in volume 44(1) of the Journal of Development Economics.

Among the most important social indicators of development used in empirical analyses is the population growth rate of countries. Yet the published data on this variable is seriously deficient (Srinivasan 1994: 16). Even the dependent variables used in this study, also used by most empirical studies on growth, have come under serious criticism in terms of their measurement. Heston (1994) analyses measurement error in calculating per capita GDP growth and concludes with a plea that users of national accounts should explicitly question the reliability of data in countries[46], especially in comparative work. The entire issue of the volume 44(1) of the *Journal of Development Economics* is on data base for development analysis with contribution from various authors on key variables-population, national GDP accounts, trade, poverty, and so forth. These papers argue that no one cause appears responsible for data irregularity and, that unreliability of data on socio-economic variables used in economic analyses is a major problem; they advise that these problems should, at least, be acknowledged in analyses using these data.

4.6 ANALYSIS OF SOURCES OF REFUGEE DATA

After critical analysis of possible flaws in the collection of refugee and conflict data**,** one begins to question the interest in undertaking statistical analysis given that data on the variables of interest are subject to unreliability and inconsistency. There was an outpouring of econometric analyses on developing countries several years ago, even though data was then subject to more widespread questioning. Data consideration should not be the sole basis on which econometric research on developing countries cannot be taken. However, pointing out those possible problems is necessary since results could be affected, and, they should be cautiously interpreted; the use of such results should be suggestive rather than used as conclusive findings. In this sub-section, I wish to further argue that the irregularity of refugee data might not be as bad as projected. Table 4.1 in the appendix to this chapter presents the

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[46] Some data sources actually make an attempt to take these problems into consideration. In the Penn World Tables 6.1, Summers and Heston assigned letter grades A-D scale to the estimates to indicate the quality of the data with A being the most reliable data and D the least.

average number of refugees in each country and the last columns of this table shows the source and basis of data collection as indicated in the UNHCR statistical yearbook 2001. Table 4.11 contains a summary of this information and a discussion on possible sources of refugee irregularity based on information in this table follows.

There are four main sources of refugee data collected by UNHCR: Government, UNHCR, NGO or Various/Other/Unknown. The last category is not clearly defined in the UNHCR statistical year book 2001 but this may be a combination of two or more of the other sources, especially Government and UNHCR. The UNHCR Statistical Year Book 2001, the first of its kind, also noted that statistics reported in the yearbook were generally provided by governments, based on their own definitions and methods of data collection. It is, therefore, not surprising that data quality varies since there is no standard method of data collection on refugees across countries. However, data is collected either by registration, estimate, survey or various/other/unknown. Registration is a key source of refugee data (UNHCR, 2002). This report also states that in many countries registration systems are implemented by the government with the support of the UNHCR; sometimes the UNHCR takes the lead in the registration of refugees but at the request of the government. The report further states that surveys and estimates supplement refugee data for groups which are not, or not fully, registered. This implies that registration is the major form of the collection of refugee data.

The most widely argued point about incorrectness or unreliability of refugee figures is the possibility of the host countries inflating the numbers. This sounds plausible from several indications, as already discussed. In this section, I intend to examine this possibility and explore how much it will affect data reliability. It is clear to all that host country governments can only inflate refugee figures if they collect the data themselves and on their own. Analyses from the sources and basis of data as shown on the UNHCR statistical year book show that governments of host countries are rarely left to do the task on their own. The table below illustrates this point.

Table 4.11 Sources of Refugee Data

	Source					Basis			
	N. Africa	SSAfr	Asia	Lamerica		N. Afr	SSAfr	Asia	Lamerica
Government	0	2	3	1	Registration	2	13	7	10
UNHCR	2	10	5	2	Estimate	0	7	0	1
NGO	0	3	0	4	Survey	0	0	1	0
Various	2	19	4	5	Various	2	14	4	1
None	0	6	2	2	None	0	6	2	2

Note: None is for countries with no refugees or those for which source or basis of data is not known. Information compiled by author from UNHCR (2002) statistical Yearbook 2001.

It is clear from this table that for North African countries, the governments are not entirely responsible for collecting refugee data. In fact, 2 of these countries have their data collected by UNHCR, while another two have their data jointly collected by UNHCR and the government. Similarly, there are only 2 out of 40 countries, 3 out of 14 and 1 out of 14 countries in sub-Saharan Africa, Asia and South America whose governments (i.e., government of refugee receiving countries) are solely responsible for collecting refugee data. Most of the other countries have their refugee data collected by UNHCR or through a combination of effort from UNHCR and the government as shown by various columns. In developing countries, lacking the capacity to implement refugee registration, UNHCR manages the primary registration process in collaboration with the host government (UNHCR, 2002). In such a situation, it is difficult to see how host government will single handedly inflate refugee figures. If this allegation is believed, it could then be argued that the UNHCR is also involved in this widely purported inflation of figures. However, these analyses are not positioned to counteract the fact that refugee figures might be grossly unreliable. Rather, it is to demonstrate that the source of unreliability, which is normally accorded to the host government, is highly debatable. Reliability of refugee data arising from other technical problems -- the nature of the influx, for example, -- can hardly be disputed.

4.7   CONCLUSION

This chapter describes the data used in the empirical estimation revealing the sources of data, sampling techniques, typical problems of statistical data on developing countries, description of data and variables and presents a summary statistics of key variables. A detailed discussion on problems of data on the key variables -- refugees and conflict -- and other socio-economic variables is also provided.

The chapter does not preclude the use of data on developing countries in economic analyses. Rather, irregularities associated with such data are, at least, mentioned to give the reader an indication of the author's awareness of the problem. Several studies, to which this current study is a 'drop in the ocean', have already used data on developing countries. They have come up with policy recommendations on which decision to help these countries have been based (World Bank policy Research papers). The preceding discussion on data irregularity is, therefore, meant to serve as a guide and not as a deterring factor against engaging in economic analyses in this study. This is because empirical analysis is not only focused on the data but most especially the methodology. Several methods could be used to circumvent the data problem. This is why the current study employs different statistical methods in investigating the effects of conflict and refugees in developing countries.

It is important to now explore how the selected variables affect growth, with the use of econometric techniques. The following chapter will analyse data with several econometric techniques and present the results of the study.

4.8 APPENDIX TO CHAPTER FOUR

Table 4.0 Summary description of variables used in the analysis and sources of data

	VARIABLE	CODE	BRIEF DESCRIPTION	SOURCE
1	GDP per capita (1)	GDPin	Current ppp values into US $ constants 1990-2000. Initial condition: 1990	World Bank CD Rom and PWT6.1
2	GDP per capita growth (2)	GDPgr	Calculated from GDP per capita above 1990-2000	World Bank CD Rom
3	Population (3)	Popgr	1990-2000	World Bank CD Rom
4	Refugee population (4)	Refabs	Average annual absolute number of refugees in a country 1990-2000	UNHCR STATISTICAL YEARBOOK,
5	Refugee per thousand (5)	Refpthou	Decade average of refugee per thousand of the asylum country's population	
6	Conflict situation (Lagged) (6)	Mincon, intcon, war. Confdum	1 if Minor, intermediate conflict or war and 0 otherwise. 1989-2000. Confdum is also a dummy variable meaning 1 if there is any type of conflict and 0 otherwise	States in Armed Conflict 2000" report
		Minnew Intnew Warnew	The continuous variable on conflict which gives a value according to the number of years in conflict	
7	Number of borders (7)	Nobord	Number of neighboring countries	WORLD ATLAS
8	Borders in conflict (8)	Anbdcon	1 if a neighboring country is in conflict and 0 otherwise. 1990-2000	LOOKING AT (6) AND (7)
9	Total Borders in Conflict (9)	Totbdcon	Ordinal variable =1 if one border in conflict and progresses	LOOKING AT (6) AND (7)
10	Trade as a % of GDP (10)	openness	1990-2000	World Bank CD Rom
11	Foreign Direct Investment (11)	FDI	1990-2000	World Bank CD Rom
12	Gross FDI (12)		1990-2000	World Bank CD Rom

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13	Life Expectancy (13)	liexpin and loglixp	Initial life expectancy (1990) or alternatively the log of life expectancy	World Bank CD Rom
14	Illiteracy rate (14)	Illitini	The illiteracy rate of countries in 1990	World Bank CD Rom
15	Total Population average school year	tyr90, tyr95, tyr99	Population 25+ who have attained secondary school. 1990, 1995 and 1999	BARRO AND LEE DATASET
16	Landlocked	Lalockt	Countries with no access to the sea	WORLD ATLAS
17	Gross Capital formation	Grcapfom	Investment in physical capital. 1990-2000	World Bank CD Rom
18	Government Consumption	Govcons	Proxy for budget deficit, 1990-2000	World Bank CD Rom
19	Gross Foreign Direct Investment	GrFdi	1990 - 2000	World Bank CD Rom
20	Ethnic	Ethni02	Ethnic fractionalisation: a combination of language and racial characteristics	World Bank CD Rom
21	Language	Lang02	The shares of languages spoken as 'mother tongues'	Easterly W. et al (2002)
22	Religious	Relig02	Religious fractionalisation	Easterly W. et al (2002)

Averages have been used for most variables except for dummies and few other variables for which initial conditions are used.

TABLE 4.1 Absolute number and percentage of refugees per country (averages)

Countries	1990-2000		1990-1995		1996-2000			
North Africa	Absolute No	% of refugees	Absolute No	% of refugees	Absolute No	% of refugees	Source	Basis
Algeria	186,300	0.67	198,033	0.74	172,220	0.58	V	V
Egypt, Arab Rep.	5,564	0.01	4,833	0.01	6,440	0.01	U	R
Morocco	521	0.00	272	0.00	820	0.00	V	V
Tunisia	242	0.00	93	0.00	420	0.00	U	R
Regional Average	**48,157**	**0.17**	**50,808**	**0.19**	**44,975**	**0.15**		
S-Sahara Africa								
Angola	10,973	0.10	11,017	0.11	10,920	0.09	V	R
Benin	24,675	0.47	41,937	0.80	3,960	0.07	U	R
Botswana	1,040	0.07	657	0.05	1,500	0.09	N	R
Burkina Faso	11,328	0.11	15,402	0.16	6,440	0.06	U	V
Burundi	152,036	2.61	259,233	4.48	23,400	0.36	V	V
Cameroon	45,936	0.35	45,183	0.36	46,840	0.33	U	V
Cape Verde	0	0.00	0	0.00	0	0.00	.	.
Central African Republic	34,945	1.02	26,883	0.84	44,620	1.24	V	E
Chad	4,618	0.06	67	0.00	10,080	0.13	V	E
Comoros	0	0.00	0	0.00	0	0.00	.	.
Congo, Dem. Rep.	622,936	1.45	836,800	2.02	366,300	0.77	V	V
Congo, Rep.	26,345	0.93	9,717	0.39	46,300	1.58	V	V
Cote d'Ivoire	230,255	1.70	264,383	2.05	189,300	1.27	V	V
Ethiopia	379,755	0.68	457,633	0.86	286,300	0.47	V	R
Gabon	3,476	0.29	390	0.04	7,180	0.59	U	R
Gambia, The	6,238	0.52	2,487	0.23	10,740	0.87	V	V
Ghana	43,127	0.25	62,550	0.37	19,820	0.11	U	R
Guinea	514,964	7.85	525,700	8.46	502,080	7.12	V	V
Guinea-Bissau	12,045	1.12	13,300	1.29	10,540	0.93	V	E
Kenya	222,655	0.83	220,917	0.87	224,740	0.78	U	R
Lesotho	66	0.00	122	0.01	0	0.00	.	.
Madagascar	18	0.00	17	0.00	20	0.00	.	.
Malawi	343,655	3.94	628,633	7.22	1,680	0.02	.	.
Mali	13,582	0.14	14,717	0.16	12,220	0.12	V	E
Mauritania	25,245	1.17	43,533	2.03	3,300	0.14	N	R
Mauritius	0	0.00	0	0.00	0	0.00	.	.
Mozambique	233	0.00	293	0.00	160	0.00	G	V
Namibia	4,285	0.25	623	0.04	8,680	0.50	U	R
Niger	9,335	0.10	10,882	0.12	7,480	0.08	V	R
Nigeria	6,318	0.01	5,150	0.00	7,720	0.01	U	V
Rwanda	48,118	0.64	62,267	0.84	31,140	0.39	U	V
Senegal	58,155	0.71	69,067	0.89	45,060	0.51	V	E
Sierra Leone	22,373	0.53	32,767	0.80	9,900	0.21	V	V

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	Absolute No	% of refugees	Absolute No	% of refugees	Absolute No	% of refugees	Source	Basis
South Africa	46,427	0.12	73,883	0.19	13,480	0.03	V	E
Swaziland	18,264	2.25	32,917	4.07	680	0.07	N	R
Tanzania	549,000	1.83	520,483	1.85	583,220	1.81	V	V
Togo	8,936	0.22	6,150	0.16	12,280	0.29	U	E
Uganda	219,609	1.14	217,267	1.21	222,420	1.06	V	R
Zambia	159,555	1.77	138,833	1.66	184,420	1.90	V	V
Zimbabwe	66,409	0.63	120,200	1.13	1,860	0.02	G	R
Regional Average	**98,673**	**0.90**	**119,301**	**1.14**	**73,920**	**0.60**		

Asia	**Absolute No**	**% of refugees**	**Absolute No**	**% of refugees**	**Absolute No**	**% of refugees**	**Source**	**Basis**
Bangladesh	70,018	0.06	108,633	0.09	23,680	0.02	U	R
Cambodia	0	0.00	0	0.00	0	0.00	U	R
India	202,109	0.02	205,050	0.02	198,580	0.02	V	V
Indonesia	30,045	0.01	7,550	0.00	57,040	0.03	U	R
Iran, Islamic Rep.	2650409	7.35	3,251,083	5.79	1929600	3.13	.	.
Lao PDR	0	0.00	0	0.00		0.00	.	.
Nepal	94,335	0.45	66,413	0.34	127,840	0.58	G	R
Pakistan	1,678,455	1.41	1,941,933	1.72	1,362,280	1.03	U	V
Papua New Guinea	7,718	0.17	7,617	0.18	7,840	0.16	G	S
Philippines	4,727	0.01	8,383	0.01	340	0.00	V	R
Sri Lanka	10	0.00	10	0.00		0.00	V	V
Thailand	108,982	0.19	96,367	0.17	124,120	0.21	V	R
Uzbekistan	4,618	0.02	700	0.00	9,320	0.04	U	R
Vietnam	17,282	0.02	15,800	0.02	19,060	0.03	G	V
Regional Average	**347764**	**0.50**	**407,824**	**0.60**	**626,202**	**0.37**		

Latin America	**Absolute No**	**% of refugees**	**Absolute No**	**% of refugees**	**Absolute No**	**% of refugees**	**Source**	**Basis**
Argentina	8,764	0.03	11,417	0.03	5,580	0.02	N	R
Colombia	298	0.00	380	0.00	200	0.00	U	R
Costa Rica	61,745	1.93	96,917	3.09	19,540	0.54	V	V
Ecuador	373	0.00	267	0.00	500	0.00	U	E
El Salvador	5,573	0.11	10,150	0.19	80	0.00	N	R
Guatemala	62,336	0.69	113,400	1.26	1,060	0.01	V	R
Haiti	0	0.00		0.00		0.00	.	.
Mexico	122,573	0.14	201,750	0.24	27,560	0.03	V	R
Nicaragua	4,936	0.12	8,650	0.22	480	0.01	V	R
Panama	1,037	0.04	1,018	0.04	1,060	0.04	G	R
Paraguay	49	0.00	73	0.00	20	0.00	N	R
Peru	664	0.00	667	0.00	660	0.00	V	R
Trinidad and Tobago	0	0.00		0.00		0.00	.	.
Venezuela, RB	1,255	0.01	1,900	0.01	480	0.00	N	R
Regional Average	19,257	0.22	37,216	0.36	4,768	0.05		

Author's calculation. **Source**: G=Government; U=UNHCR; N=NGO and V=Various/Other/Unknown;
Basis:R=Registration; E=Estimates; S=Survey and V=Various/Other/Unknown; **Source**: Refugee population by country or territory of asylum: 1992-2000 UNHCR (2002, p.84-85). Statiscal Yearbook 2001, 1990 and 1991 UNHCR Statistical Overview 1990 and 1991: www.unhcr.ch

Table 4.12: VARIABLES WITH MISSING DATA PROBLEM

Countries	GDP per capita	GDP growth	Trade	FDI	Illiteracy	Educational attainment
Angola					NA	NA
Libya	**NA**	**NA**	**NA**	**NA**		**NA**
Morroco						NA
Cote D'ivoire						NA
Burkina Faso						NA
Burundi						NA
Cape Verde						NA
Chad						NA
Comoros						NA
Djibouti	**NA**	**NA**	**NA**	**NA**		
Eritrea	**NA**	**NA**	**NA**	**NA**		
Ethiopia						NA
Gabon					NA	NA
Guinea					NA	NA
Guinea Bissau						NA
Liberia	**NA**	**NA**	**NA**	**NA**		
Madagascar						NA
Mauritania						NA
Malawi						
Namibia				NA		NA
Nigeria						NA
Sao Tome and Principe	**NA**	**NA**	**NA**	**NA**	**NA**	
Seychelles	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**
Sierra Leone					NA	
Somalia	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**
Sudan	**NA**	**NA**	**NA**	**NA**		
Afghanistan	**NA**	**NA**	**NA**	**NA**		
Myanmar	**NA**	**NA**	**NA**	**NA**		
Tajikistan	**NA**	**NA**		**NA**		**NA**
Tanzania						NA
Cambodia						NA
Laos						NA
Uzbekistan						NA
Vietnam						NA

NA: Not available

4.8.1 List of countries included in the sample
The countries have been classified according to the World Bank definition. This is very important background for this research since the GDP levels of the countries, although not the sole determinant of its level of development, could suggest the gravity of refugee flow effects. The sample includes the following countries:

LOW GDP ECONOMIES:
Sub Saharan Africa: -Angola*λΩ, Benin, Burkina Faso, Burundi*λΩ, Cameroon*, Central African Rep., Chad*λΩ, Comoros*, Congo, Dem. Rep. *Ω, CongoΩ, Cote d'Ivoire, Ethiopia*Ω, Gambia, Ghana, Guinea, Guinea-BissauλΩ, Kenya, Lesotho*, Madagascar, Malawi, Mali*, Mauritania*, MozambiqueΩ, Niger*, Nigeria*, Rwanda*λΩ, Senegal*λ, Sierra Leone*λΩ, Tanzania, Togo*, Uganda*λΩ, Zambia, Zimbabwe,
Asia and the Pacific: Bangladeshλ, CambodiaλΩ, India*λΩ, Indonesia*λΩ, Laosλ, Nepal*, Pakistan*λΩ, Papua New Guinea*, Uzbekistan*, Vietnam,
American and Caribbean: Haiti*, Nicaraguaλ,

LOWER MIDDLE GDP ECONOMIES:
North Africa: Algeria*Ω, Egypt*, Moroccoλ, Tunisia,
Sub Saharan Africa Cape Verde, Namibia, South AfricaΩ, Swaziland,
Asia and the Pacific: Iranλ, Philippines*λΩ, Sri LankaλΩ, Thailand,
American and Caribbean: ColombiaλΩ, Ecuador*, El SalvadorλΩ, GuatemalaλΩ, Paraguay*, Peru*λΩ,

UPPER MIDDLE GDP ECONOMIES:
Sub Saharan Africa: Botswana, Gabon and Mauritius,
American and Caribbean: Argentina, Costa Rica, Mexico*, Panama*, Trinidad and Tobago*, Venezuela*

NOTE: An asterisk indicates that the country experienced a minor conflict, a lambda sign shows that the country had an intermediate conflict and Omega sign, war.

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CHAPTER FIVE: GROWTH REGRESSIONS

5.0 INTRODUCTION

An important aspect is to see how the variables discussed in the previous chapter affect growth. As a way of laying the foundation for the discussion on the estimated results, the chapter begins by presenting theoretical arguments on the effects of conflict in own country and the effects of refugees on host countries.

First the estimations observing the indirect effects of conflict and refugees on economic growth (effects of conflict on growth enhancing variables) are presented. This involves the presentation of results of a simple regression model. The section estimates a bivariate relationship between conflict (refugees) and growth enhancing variables. The prevalence of conflicts and the flow of refugees are 'bad' in themselves since the absence of peace serves as a hindrance to well-being and displacement comes with a multitude of problems. These estimations examine the other channels through which conflicts and refugees can reduce well-being in developing countries.

Prior to the presentation of results on the general growth regressions, a sub-section estimates the results of different refugee threshold on economic growth. The purpose of this sub-section is to probe growth rate differences among countries with different sizes of refugee population. One of the implicit objectives of this study is to observe growth rate differences between countries which host refugees, on the one hand, and those which do not, on the other. This objective is difficult to implement since there are fewer samples[1] with no refugees. Consequently, this sub-section observes this effect by splitting the percentage of refugee variable into smaller percentages and observing growth rates differences of countries that fall within the different groups.

The transitional dynamics of the Solow growth model is selected as a framework for this study. This model has key predictions which have, over the years, received immense attention in the literature of growth empirics. Given that this study, like its predecessors, kicks off from

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[1] There are only about 9 out of the 72 countries which do not host refugees: the 4 island countries of Africa included in this study, Cambodia, Laos, Haiti, Trinidad and Tobago, and finally, Sri Lanka, which has negligible numbers of refugees.

this model, the data also tests for the predictions of the model. Results testing, both absolute and conditional convergence, are presented and discussed.

Following the results on the prediction of the Solow model are those on growth regressions. Since the literature on the empirics of growth involves more general forms of the augmented Solow model, this chapter estimates and interprets results of a broader nature, including several socio-economic variables that have been used in other studies. Since the effect of refugees on economic growth is theoretically said to be ambiguous (section 5.1.2), it is expected that establishing the effects of refugees on growth could also not be an easy empirical task. As a result, of the 'not too clear' results of the effects of the percentage of refugees on economic growth, a sub-section on the effect of refugees on different GDP per capita threshold is estimated. The essence is to ascertain whether the effect of refugees depends on the economic status of the host country. Such effects could not be concluded in a single cross section framework which averages data over a long period and groups different countries, fast as well as slow growing ones, together. An attempt is made here to discern the effect of conflict and refugees on different GDP per capita threshold.

The results are then related to previous findings and explained in terms of economic relevance. Finally, as a way of addressing some of the problems[2] of empirical studies, the chapter carries out a few country specific analyses.

5.1 THEORETICAL DEBATES

This section discusses the possible effects of conflict and refugees on host countries. Economic theory, combined with intuition, is used to theoretically discuss the links through which the prevalence of conflict and the stock of refugees in a country can impede economic growth.

This section will attempt to discuss the effects of refugees and conflict on the economy. It will be hard to think of a scenario in which authors (especially those who have written on similar topics) think that conflict and refugees have no effect on economic growth especially on the economies of developing countries. The only possible controversy in this regard could be the

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[2] There are, to mention but a few: measurement error, omitted variable bias on data, which are most often beyond the control of the researcher especially when secondary sources of data are used.

evidence of the effect as well as its magnitude. Although this is the overarching task of the empirical estimation in this chapter, this section discusses theoretical links between conflict and refugees and economic growth. The section does not claim to do justice to the discussion of these variables since there are several theoretical debates on these issues. However, a serious attempt is made to draw pertinent links between these variables.

5.1.1 Theoretical discussion on the effects of conflict[3] on economic growth.

Conflict can hurt economic growth in several ways, especially the growth of 'young economies'. The most common way in which conflict damages the economy is through the destruction of some resources. Part of the labour force is killed, houses are burnt down, bridges blown up and, with the prevailing unconventional conflicts where international instruments are not taken into consideration in the use of deadly weapons, the effects can continue to be felt several years after the conflict. The use of landmines in Angola, for example, will continue to affect farming seriously. Public offices, which are major employing agents in developing countries, are usually primary targets of destruction, often being set on fire as part of sabotage. At the very least, this results in temporary unemployment, and at worst, it leads to permanent loss of very important documents in ministries and public functionaries.

In addition to the destruction caused by conflict, serious disruption and accompanying social disorder is another well-known effect of conflict. In many instances, some roads become unsafe and so extra costs are incurred to remedy the situation. Because of the centralised system of most developing countries, (essential) goods imported need to be transported, typically by road, from the capital to the provinces. During conflict when major roads are blocked, or come under constant ambushes, transporting these goods becomes more expensive increasing the price even further.

Further, conflict diverts the attention of the population away from most issues, as all concerns become directed at security related issues. In such cases, civil liberties may be suppressed, which, in turn, might affect the efficiency of public expenditure.

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[3] This sub section draws reference from Collier (1998).

An even more destructive effect of conflict is the diversion of public expenditure from development oriented activities to security ones. Security ranks first on the scale of preference in times of conflict. Although this is understandable, running such programmes at the expense of development programmes is very dangerous given the unpredictable lengths of most conflicts. The military costs of countries increase when they are in conflict (see literature review in chapter 3). This epitomises the diversion effect of conflict.

In times of conflict, contract enforcement and property right protection are expected to diminish as general security reduces. These effects, in turn, greatly affect the inclination to save. Given the established importance of savings for an economy's growth[4], this is a worrying effect. The aversion to saving arising from conflict or another factor, such as interest rates, also reduces domestic investment drastically. This, in turn, reduces the growth rate of per capita GDP.

The persistence insecurity and threat to life resulting from conflict can quickly change into citizens' anticipation of flight as well as to the actual substitution of portfolio. Portfolio substitution is used to refer to the movement of capital, in this case. Assets are normally moved out of the conflict-ridden regions of a country to relatively safer regions, or to other countries. Assets here mean financial, physical and human capital. The human capital flight is what we see as the 'product' of refugees. In general, capital flight is a problem typical to developing countries, and one which rears its ugly head even faster in times of conflict. Capital prospers in an investment friendly environment. There is a double effect of capital flight on a country at war: domestic investment reduces at the same time that foreign direct investment is also likely to reduce. Domestic and foreign capital flies away from conflict countries. This action hurts the country from which capital is being withdrawn but also the country to which the capital is attracted.

Portfolio substitution constitutes an effect not only on the country of origin but also on the destination country. Financial capital might be oversupplied (depending on how rich the 'new comers' are) which leads to the consequent reduction of revenue in the asylum country. Capital is best thought of here as the supply of labour, another instance of capital expatriation

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[4]This is emphasised in almost all economic growth models, especially the Harrod-Domar and the Solow growth models.

is the emigration[5] of those with skills. The country from which labour departs suffers from an inadequate supply of labour but labour in this country gains from higher wages. Alternatively, the asylum country gains by an increase of labour but labour suffers from depressed wages. This is, however, conditional upon the assumption of full employment, although wages are also likely to fall because of increased competition in labour supply.

Another effect of conflict similar to that of portfolio shifting is the opportunity cost of rebel labour in times of conflict. This increases depending on the general GDP level and the human capital level of an economy. A country at war looses its manpower which could be engaged in employment. If GDPs are generally high in this economy, the loss increases with the duration of the conflict. Considering that most conflicts are now increasingly civil[6], this cost can be observed as high in developing countries where most of these conflicts take place. Both the rebel forces and civilians have to stop normal economic activities to engage in war, further reducing economic growth.

Another peculiar characteristic of conflict affected countries is the exploitation of resources. Countries with a wealth of natural resources have been known to reduce in economic growth since these resources are normally used to fuel the conflict. This is especially the case if such regions in a country fall into the hands of the rebels. This is definitely a cost on the economy, especially for those countries which rely heavily on such resources in order to sustain the economy.

Finally, the per capita taxable capacity of an economy can drastically reduce in periods of war since businesses are likely to 'wind-up' because of distortions and because people flee. These effects might persist even after the conflict subsides and well into the initial years of peace because investors might still consider the country unsafe. This is especially the case for countries which have a history of punctuated conflict.

5.1.2 Theoretical debates on refugees and economic growth

To my knowledge, a solid theory does not yet exist on the economic effects of refugees on host countries. Indeed, the specific issue of refugees is yet to attract social scientists, economists most notably, although this is not true for migration in general. This underscores

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[5] The mass emigration of Hutus from Rwanda substantially reduced the labour force
[6] See Sollenberg (2001).

the importance of theorising the distinction between refugees and economic migrants as a move away from the prevalent tendency to imagine that the two different groups of migrants are the same in theoretical discussion. In its simplest form, a distinction between economic migrants and refugees revolves around the conscious decision made by the former to leave their countries, whereas the latter are forced to leave usually because of increasing insecurity. Without this foresight, even the most developed theory on migration is ill-equipped to fit the description of forced migration and its effects on the economy. However, in this section, I engage in a discussion on the possible effects of refugees on host country economy while assuming this group of migrants to be distinctly different from economic and other forms of migrants.

In section 5.1.2, I discussed the possible effects of conflict on the economy arising from the diversion of capital to non-economic activities. This act of diversion of funds from development related activities is not an exclusive peculiarity of countries in conflict; refugee hosting countries have been observed to partake in similar manoeuvres. In the first instance of initial arrival, the host country might incur costs in feeding and accommodating refugees even if this occurs at a micro level by citizens' hospitality. It is also important to recognise that hosting refugees might lead to the diversion of international support for a country away from its development activities. This can be observed when aid to host countries with large refugee populations is directed towards the welfare of the refugees in those countries, rather than to developmental activities of the host country. Tanzania, one of the countries which host the largest amounts of refugees, could be suffering from such a problem. This action reduces the productive capacity of the economy especially if it relies on international support.

Moreover, a reduction in the propensity to save in conflict-ridden countries is influenced by the lack of contract enforcement, property right protection[7] and by the anticipation of flight; it might also affect the destination country. People prefer to move with liquid cash at hand for subsistence at least for the initial period of flight. On the one hand, this will increase the market size of those regions in which the refugees are concentrated, but the increase in market size will soon translate into a negative effect (Whitaker 2002). Prices of essential goods are known to escalate during the influx of refugees since refugees are normally ready to pay

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[7] Both of which are characteristics of most developing countries as the rule of law is normally poor even in the absence of conflict.

anything for their survival. This stems both from refugees' desperation and the availability of financial capital from private savings during the phase of initial flight. The increase in prices of basic commodities in refugee affected regions in a country indicates an increase in the cost of living and a simultaneous reduction in the standard of living in the economy. But this can only happen in the short run, since, in the long run suppliers become aware of the expansion of the market in these regions and the increased supply of goods will eventually bring the price of essential commodities back to their initial equilibrium level.

Refugees can attract international assistance for their own welfare as well as for the welfare of their hosts. To improve refugee host relationships, most donor agencies have incorporated local hosts into refugee activities who since the local hosts may not be different from the refugees themselves in terms of their poverty levels. These activities can be beneficial to the host country while the refugees remain there and afterwards. NGOs initiated development projects in host communities in Tanzania as a deliberate donor decision to compensate Tanzanians collectively for the burden of hosting refugees (Whitaker 2002). These agencies build schools, provide health centres and temporary shelters which could be used by the host population when refugees repatriate. However, donor activities bring about only modest improvement to the economy especially given that the international community is experiencing donor fatigue.

The increasing exploitation of environmental resources in refugee hosting regions of a country is another potentially long-term effect on the economy from hosting refugees. Refugees' reliance on firewood for cooking, for example, might lead to deforestation whose effects go a long way even subsequent to the departure of the refugees. Although deforestation are not problems specific to hosting refugees in developing countries due to their probable presence prior to the arrival of refugees, it is, nonetheless, expected that the rate will accelerate with the presence of refugees.

The most immediate impacts of refugees are felt on the economic level, but refugees can also affect other aspects of the host society. Social relations, culture, national politics and international relations might all be affected by the presence of refugees. Migration, in general, inevitably leads to greater ethno-cultural diversity within nation-states, transforming identities and blurring traditional boundaries (Castles 1998). Everit (1987) noted, in relation to

Guatemalan refugees in Belize, that the problem of international migration for Belize is the change in the ethnic balance of the country. These situations further suggest that hosting refugees exert pressure not only on the economy of receiving countries but the country's social cohesion. Similarly, the security situation in host countries is likely to reduce with the drastic increase of the number of people in a region. With the unconventional method of warfare in most developing countries, it can be challenging to compellingly distinguish between rebels and refugees creating pandemonium and suspicion among residence of the host country.

The effects of refugees on the host country economy are sometimes exacerbated by associated principles governing the refugee regime. The burden sharing principle[8] of refugees, in particular, expected of all countries, reduces refugee productivity in developing countries. This is the principle evoking the moral obligation of non-refugee hosting countries, or those countries with fewer refugees, towards countries with a heavy refugee burden. This then refers to countries in the North, who have fewer refugees, to share the burden with those in the South, which hosts most refugees. Sharing the burden need not mean the physical transfer of refugees from the South to the North, but can be addressed through financial help to those countries in the South who are major refugee hosts. But some times resettlement programmes are instituted, in which case some refugees are shared among Northern countries. However, usually these Northern countries insist on taking the 'grains from the chaff' since conditions for resettlement 'pick and choose' the 'best' (in terms of the possession of human capital) refugees for resettlement. This opportunism leaves the developing countries with the less educated refugees, thereby increasing their burden, since the South is then left with the less productive members of the refugee population.

Finally, it has not been possible to present a comprehensive theoretical debate on the effects of conflict and refugees on host countries. Such a task would greatly exceed what could realistically be included in a short section of this study. Indeed, what I have tried to emphasise above are some of the common effects that could be observed in the economy when refugee and conflict forces are set in motion. Economies are diverse; therefore, the effects of these phenomena can vary considerably from region to region, and, even from country to country.

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[8] This is the means (whether by resettlement or providing cash or other materials) by which developed countries help alleviate developing countries' refugee burden. But the resettlement criteria normally lead to taking the best out of the rest.

The remainder of this chapter empirically establishes the link between refugees, conflict and economic growth.

5.2 ESTIMATION RESULTS

Economic theory provides a basis for identifying important variables. The remaining challenge of this work is how to combine economic theory with the information supplied by economic data to estimate the coefficients of the impact of refugees and conflict on economic growth. Specifically, I want to know (estimate from the data) the effect (β) of a change in one explanatory variable on the average outcome.

There are three categories of results presented in this section. The first set, presents results on simple regression estimates on the effects of conflict and refugees on various economic development determinant variables The second set of results, referred to as 'regressions of sub-group' presents results of the effect of refugees on economic growth by trying various refugee thresholds to further probe how the refugee variable responds to different economic situations. Finally, a set of results are presented on general growth regressions using the single cross-section and panel data estimates. Since cross sectional data and panel data have been used, the results of the estimation are provided separately.

5.2.1 Bivariate regressions Results

There is a general consensus among economists that growth is not necessarily development. So investigating the effect of conflict and refugees through an exclusive focus on growth does not answer the intriguing question about the impact of these very important variables and their effect on the economy. Therefore, in this section, bivariate regressions have been estimated having conflict or percentage of refugees as the only independent variable and several dependent variables which have been identified and believed to determine economic development. The aim is to estimate the relationship between conflict (and refugee) and broader indicators of well being.

The variables identified in this study as determinants of economic development (or indicators of well being) are the growth rate of per capita GDP, the average value of GDP per capita, the growth rate of the population, gross capital formation (investment), average life expectancy, secondary school enrolment and trade as a percentage of GDP. The first four variables are

selected because of their importance as traditional variables in the Solow growth model. The variables on life expectancy and school enrolment are proxy for human capital which is also an important indicator of well being and are also important in the augmented Solow model. The decision to choose 'openness' as a determinant of economic growth stems from the belief that this variable is affected when countries are in conflict and that it is good for development. The study believes that although conflict and refugees may affect economic growth directly, they may also indirectly impede growth through their effects on other determinants of growth. This relationship can be seen by estimating bivariate regressions between the two variables and growth determinant variables. Being aware of the problems with single variable regression[9], a table on pear wise correlation coefficient is also provided in the appendix to this chapter to further indicate the relationship between conflict, refugees and determinants of well being.

5.2.2 Conflict as Determinant of Economic Development Indicators

The results, as shown on table 5.1, reveal the effect of conflict on conflict-ridden countries. The results on this table use five of the conflict variables in this dataset to probe their effect on the respective economic development indicator. The first three variables are continuous variables --Ymincon, Yintcon and Ywar -- which indicate the total years a country is in conflict; the 'confdum' variable is a dummy variable that combines all three types of conflict examining what happens to a country in conflict, irrespective of the type of conflict; and 'sipricon' is an alternative continuous conflict variable from a different source - see chapter 4.

It turns out that the effect of conflict on economic development indicators at time of ongoing conflict yield very mixed results in this bivariate analysis. The different conflict variables change signs several times with different economic development indicators. However, minor conflict show significant negative effect on the average of per capita GDP growth. A special indicator of economic development on which conflict exerts serious pressure is that of trade. Conflict in a country significantly reduces its openness. These results are consistent with all types of conflict variables. This outcome matches other results in the literature, most notably the influential works of Collier and Hoeffler (2002) on the economic consequences of civil war. Furthermore, looking at the results on the column 'conflict' and 'sipricon', reveals that

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[9] This study takes some measures in the estimation of the simple regression model by calculating robust standard errors corrected for autocorrelation and heteroscedasticity.

conflict in own country reduces 5 out of seven indicators of well-being selected for the analyses of this section.

Table 5.1
Conflict as determinant of economic development indicators
(Dependent variable: various economic development indicators)

Dep v	Ymincon	C	R	Yintcon	C	R	Ywar	C	R	Conflict	C	R	Sipricon	C	R
gdpgr	-0.049	0.497	0.00	0.077	0.326	0.01	-0.085	0.531	0.01	-0.682	0.873	0.02	-0.967	0.803	0.03
	(-0.43)	(1.54)		(0.68)	(1.05)		(-0.61)	(1.84)		(-1.21)	(2.15)		(-1.31)	(2.40)	
gdpave	-227.9	3150.39	0.06	-88.79	2944.6	0.01	49.73	2767.4	0.00	-583.8	3208.6	0.01	-616.9	3066.5	0.01
	(-2.96)	(9.19)		(-1.07)	(8.69)		(0.48)	(8.82)		(-0.91)	(5.69)		(-1.00)		
popgr	0.023	2.284	0.01	-0.023	2.349	0.01	-0.026	2.349	0.01	-0.083	2.372	0.00	-0.059	2.341	0.00
	(0.84)	(27.92)		(-0.95)	(29.21)		(-0.79)	(30.11)		(-0.56)	(18.80)		(-0.37)	(23.28)	
Investment	-0.429	20.953	0.02	-0.231	20.64	0.01	-0.071	20.42	0.00	-0.651	20.76	0.00	-0.981	20.72	0.00
	(-1.44)	(22.36)		(-0.88)	(20.80)		(-0.25)	(21.69)		(-0.41)	(17.80)		(-0.58)	(17-.98)	
Life Expect	-0.005	4.019	0.00	0.010	3.998	0.01	0.007	4.003	0.01	0.075	3.962	0.03	0.019	4.003	0.00
	(-0.55)	(135.9)		(1.20)	(141.11)		(0.64)	(144.10)		(1.42)	(90.84)		(0.32)	(118.91)	
School	-1.203	38.07	0.02	0.208	36.09	0.00	1.945	34.011	0.04	2.023	35.04	0.00	1.523	34.770	0.00
	(-0.96)	(12.55)		(0.22)	(11.61)		(1.61)	(11.80)		(0.38)	(8.89)		(0.23)	(10.39)	
Opennes	-2.259	67.907	0.01	-4.141	70.086	0.13	-1.257	66.203	0.01	-16.203	75.16	0.07	-17.179	71.412	0.06
	(-1.94)	(17.15)		(-4.57)	(18.01)		(-0.69)	(17.53)		(-2.22)	(12.11)		(-2.28)	(14.07)	
N[10]	71-72			71-72			71-72			71-72			71-72		

Corrected for standard errors. Robust t-statistics are in parentheses
Gdpgr- growth rate of GDP per capita (1990-2000), Gdpav-average real per capita GDP 1990-2000
Popgr-Population growth rate 1990-2000, Investment-Average gross capital formation 1990-2000, Life Expectancy - The log of life expectancy in 1999[11]
Openess-average trade as a % of GDP, School-average secondary school enrolment rate, Ymincon, Yintcon and Ywar are the number of years a country is in minor and intermediate conflict and war

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[10] The number of observations for all specifications ranges between 69 and 72 except for GFDI which is 55 for all specifications.
[11] 1999 is the most recent data on life expectancy I the WDI 2002 CD Rom

A supplementary table to table 5.1, given as table 5.1.2 in the appendix, runs correlation coefficients on conflict and economic development indicators. These results re-emphasise the effect of a country being in conflict on its trade links. The negative correlation between conflict and most of the indicators of economic development is also evident.

The negatively significant effect of conflict on the level of trade of countries is expected to be more severe on Africa generally since this region relies more on trade[12] than other regions. It is obvious that when a country is at war nobody wants to trade with them. Insecurity greatly reduces trading partners' motivation since no profit-making body is expected to be risk-neutral. This is also similar to what happens to domestic (gross capital formation) when countries are in conflict. What further stresses the economies of developing countries is the reduction of aid by donors sharply during periods of active conflict, thereby reducing the means of investment[13].

A counterpart to section 5.2.2 is the investigation of what happens to the selected indicators of well being when the percentage of refugee variable is controlled for.

5.2.3 Effect of Refugees on Economic Development Indicators

As explained earlier for conflict, the effect of refugees on various indicators of determinants of economic development is also observed. Table 5.2 presents results on the effects of the percentage of refugees and the total number of refugees hosted and their effect on growth enhancing variables.

In the first column, there are few significant variables which show interesting results. Refugees significantly reduce investment, life expectancy and school enrolment in the host countries. They also marginally decrease GDP per capita. The results are in accordance with what common sense will predict: that refugees, reduce domestic investment (possibly through the diversion effect discussed in section 5.1.2), significantly reduces life expectancy (through crowding on meagre health facilities of the hosts) and reduces school enrolment, possibly similarly as with life expectancy.

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[12] This could be seen by looking at simple averages of trade as a percentage of GDP across regions: North Africa 63%, Sub-Saharan Africa 69%, Asia 62% and 57% for Latin America.
[13] This is also observed by Collier and Hoeffler (2002).

Although most of the variables are of similar signs as in the percentage of refugee when I control for the absolute number of refugees, the significance levels are too low to necessitate an explanation of the results. However, it is significant that having refugees is inversely related to the amount of trade a country can engage in.

Table 5.2: Refugees as Determinant Of Economic Development Indicators
(Dependent variable: various economic development indicators)

Dependent Variable	PERCENTAGE OF REFUGEES (1)				ABSOLUTE NUMBER OF REFUGEES (2)			
	β	Constant	R^2	N.	β	Constant	R^2	N.
gdpgr	-0.243 (-1.11)	0.585 (1.90)	0.01	72	-3.840 (-0.06)	0.433 (1.48)	0.00	72
gdpav	-282.7 (-1.48)	3010.3 (9.39)	0.02	72	-0.0001 (-0.06)	2844.05 (9.42)	0.00	72
popgr	0.06 (1.22)	2.28 (29.40)	0.02	72	-6.970 (-0.42)	2.327 (31.89)	0.00	72
grcapfom	-0.942 (-1.78)	20.96 (22.04)	0.03	71	-9.980 (-0.55)	20.468 (23.31)	0.00	71
openess	-1.422 (-0.67)	65.59 (18.10)	0.00	71	-0.00002 (-2.88)	66.80 (18.23)	0.05	71
loglixp	-0.047 (-2.05)	4.042 (151.5)	0.07	72	2.100 (0.37)	4.001 (150.74)	0.00	72
School	-4.230 (-1.98)	39.096 (12.88)	0.05	72	1.050 (0.00)	36.340 (12.45)	0.00	72

Regression with corrections for robust standard errors
Corrected for standard errors.
Robust t-statistics are in parentheses
Gdpgr- growth rate of GDP per capita (1990-2000)
Gdpav-average real per capita GDP 1990-2000
Popgr-Population growth rate 1990-2000
Investment-Average gross capital formation 1990-2000
Loglixp - The log of life expectancy in 1999
School- Average secondary school enrolment rate 1990-2000
Openess- average trade as a % of GDP 1990-2000

Correlation coefficients on refugees and economic development indicators are provided in table 5.2.2 to show the effect of percentage of refugees and the absolute number of refugees. Most signs of the coefficients are consistent with findings in table 5.2.1. The following section carries out estimations of different thresholds of the percentage of refugee variables and its effects on GDP growth.

5.3 REGRESSION FOR SUB-GROUPS

In table 5.3, a restriction is placed on the regression in trying to find out the effect of having fewer refugees. This is also carried out in a bivariate regression format. Convenient thresholds

of the percentage of refugees and the absolute number of refugees are selected to show how growth is affected while controlling for these thresholds.

5.3.1 Effect of various refugee threshold on economic growth

Table 5.3 presents results on various thresholds of the percentage of refugee variable using both a two- and a three-way split. The results on various absolute number of refugee threshold are also shown. From this table, results could be interpreted as revealing that having 0.7% of refugees is positive and significant on growth, whereas hosting less than the same amount of refugee negatively and significantly reduces growth. The results are the same when the threshold of ratio of percentage of refugee is increased to 1.8%. A three-way split is also attempted in addition to the two-way split on the threshold of the percentage of refugees and its effect on economic growth. The results predict that falling within a lower threshold (>0<0.5) of percentage of refugees hosted yields negative and significant consequences for economic growth and a higher threshold (>1) produces positive effects for growth. The results of lower thresholds are negative and significant at the 1 and 5% levels.

Applying a similar strategy to the total number of refugees, results could be interpreted in the same sense to mean that having fewer refugees is negative for growth but more refugees show a positive effect. These results are consistent with higher boundary restrictions[14] both on percentage of refugee and for absolute number of refugees. Similarly, another three-way split, increasing the threshold of the percentage of refugees

produces similar results[15]. However, given the nature of data on refugees, these results should be interpreted with caution, although they are suggestive of the effects of refugees on different economies.

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[14] If refper >1.1 β is 0.256 (0.82) for 14 countries and β is −3.020(-2.94) for 58 countries with an R² of 0.11.

[15] If perref <1.5>1 β is −3.14 (-2.80) (resulting to the same result when the percentage of refugees is <0.5>0) also for 57 countries, if perref >1.5<2, β -0.16 (-0.81) for 67 countries and if perref >2 β is 0.50 (1.35) for 5 countries with 0.38 R²

Table 5.3 : The refugee burden and its effect on countries

Variable	Percentage of Refugees							Absolute number of refugees			
	Two way split				Three way split						
	>=0.7[16]	<0.7	>=1.8	<1.8	>0<0.5	>0.5<1	>1	>=500000	<500000	>=128859[17]	<128859
gdpgr	0.304	-3.234	0.187	-2.102	-2.983	-0.849	0.314	2.39	-1.120	1.02	5.100
	(1.57)	(-2.05)	(0.64)	(-2.81)	(-2.86)	(-0.41)	(1.24)	(1.50)	(-0.39)	(2.13)	(0.67)
Constant	-1.186	1.129	-0.352	1.138	1.230	1.150	-1.22	-3.901	0.591	-1.102	0.553
	(-1.31)	(3.37)	(-0.19)	(3.37)	(3.46)	(2.85)	(-0.98)	(-1.05)	(1.83)	(-1.11)	(1.52)
N.	18	54	7	65	57	47	15	5	67	14	58
R^2	0.04	0.09	0.03	0.14	0.11	0.01	0.04	0.28	0.00	0.06	0.00

Robust standard errors calculated.
(t-statistics are in parentheses).

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[16] The mean value of percentage of refugee of the population is 0.65
[17] this is the mean value of absolute number of refugees. That is the average of refugee flow in countries in my dataset.

This study does not conclude, from the findings of section 5.3.1, that having large numbers of refugees (in absolute as well as relative terms) produces a positive effect on growth whereas the reverse produces a negative effect. From another perspective, these results could be interpreted to mean that those countries with high share of refugees are already growing positively and those with lower percentages of refugees have been experiencing negative growth, therefore, the effect of refugees do not change the status quo.

Having seen the effects of conflict and refugees on different growth enhancing factors, another aspect key to this study is to use data to test the prediction of the growth model used as a framework for this study.

5.4 TESTING THE DATA ON THE PREDICTIONS OF THE SOLOW MODEL

Before the general form of the empirical specification of this study, I wish to test the data to see if key prediction of the Solow model hold for the data collected in this study. The section reports regressions of the change in the growth rate of per capita GDP over the period 1990 to 2000 on the log of initial GDP per capita (1990), with and without controlling for other traditional determinants of growth in the Solow model. In addition to results presented in the tables of this section, graphical representations of the results have also been provided in the appendix of this chapter.

Table 5.4.1 Test for Absolute Convergence

Dependent variable: Growth rate of Real GDP per capita	
Variables	**All countries**
Constant	-3.27
	(-1.16)
Log initial GDP	0.486
	(1.32)
R^2	0.02
$\bar{R}^2$	0.01
No. of Obs	72

t statistics are in parentheses. Log initial GDP is per capita GDP in 1990

In table 5.4.1, there is only one variable on the right hand side. The ß value for the initial per capita GDP is positive which is in contradiction to the prediction of the absolute convergence hypothesis of the Solow model. Although the variable is not statistically significant, there is some evidence (sign of ß and the slope of the line in figure 5.0) in the data rejecting the absolute convergence hypothesis. The results indicate, therefore, that there is no tendency for countries with low initial per capita GDP (poor countries) to grow faster than their

counterparts with high initial per capita GDP (rich countries) with the assumption that all countries have the same production function.

Table 5.4.2 Test for Conditional Convergence (text book Solow model)

Variables	All countries
Dependent variable: Growth rate of Real GDP per capita	
Constant	0.895
	(0.28)
Log initial GDP	-0.239
	(-0.72)
Population growth	-1.092
	(-2.35)
Investment	0.189
	(5.27)
R^2	0.42
$\overline{R}^2$	0.39
No. of Obs	71

Note: t statistics are in parentheses. Log initial GDP is per capita GDP in 1990, investment is initial value of gross capital formation as a % of GDP and population growth rate is between 1990 to 2000

In table 5.4.2, controlling for the two variables, population growth and savings[18], in the text book Solow model, we see some evidence of countries to converge to their own steady states although this relationship is not significant. This is also seen when examining figure 5.2 in the appendix. The initial values of per capita GDP correlate negatively with the growth rate of per capita GDP an indication of conditional convergence.

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[18] Gross capital formation as a percentage of GDP is used in this case. This should be fine with the assumption that savings in an economy equals investment.

Table 5.4.3 Tests for Conditional Convergence (Augmented Solow model)

Dependent variable: Growth rate of Real GDP per capita	
Sample	**All countries**
Constant	-17.202
	(-2.34)
Log initial GDP	-1.107
	(-2.47)
Population growth	-0.722
	(-1.55)
Investment	0.163
	(4.61)
Life expectancy	6.053
	(2.72)
R^2	0.48
$\overline{R}^2$	0.44
No. of Obs	71

Note: t statistics are in parentheses. Log initial GDP is per capita GDP in 1990, investment is initial value of gross capital formation as a % of GDP, population growth rate is between 1990 to 2000 and life expectancy used as a proxy for human capital is the log of the initial value of life expectancy at birth.

Controlling for variables in the Augmented Solow model[19], table 5.4.3 illustrates the significant tendency toward conditional convergence for countries in Africa, Asia and Latin America. The results indicate that subject to differences in population growth, investment, and human capital among countries, there is a tendency that countries which start off with low per capita GDP will grow faster than those with a high initial per capita GDP. The adjusted R^2 is also higher for this test (44%) than the previous two, confirming that the Solow model augmented by human capital explains a greater part of growth rate differences among countries. See figure 5.3.

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[19] Life expectancy is used as a proxy for human capital here since data was less available for most of the education variables (illiteracy, school enrolment rate and total years of schooling) which are the most widely used proxies for human capital, but also because the results on the education variable in this study are not very consistent with theory.

Table 5.4.4: Test for Conditional Convergence
(Augmented Solow model with key variables)

Dependent variable: Growth rate of Real GDP per capita	
Sample	**All countries**
Constant	-16.913
	(-2.23)
Log initial GDP	-1.164
	(-2.60)
Population growth	-0.796
	(-1.71)
Investment	0.159
	(4.50)
Life expectancy	6.270
	(2.77)
Conflict	-0.768
	(-1.64)
Refugees	0.036
	(0.19)
R^2	0.50
$\overline{R}^2$	0.45
No. of Obs	71

Note: t statistics are in parentheses. Log initial GDP is per capita GDP in 1990, investment is initial value of gross capital formation as a % of GDP, population growth rate is between 1990 to 2000, life expectancy used as a proxy for human capital is the log of the initial value of life expectancy at birth, is a dummy variable if a country is in conflict or not and refugees is the % of refugees in a country.

Adding the two key variables of this study, conflict and refugees, on the right hand side of the equation in addition to the traditional variables of the augmented Solow model, the coefficient on the initial value of GDP per capita is significantly negative showing that there is strong evidence of convergence (significance at the 1% level) in the data even when we additionally control for the key variables of the study. The data of this study confirms that countries which start off poor tend to grow faster. The adjusted R^2 also slightly increased in this case.

To summarise section 5.4; although this study uses a relatively short time period[20] the data confirms the predictions of the Solow model by showing evidence of conditional convergence and evidence of lack of absolute convergence. The remaining results now estimate more general forms of specification including a range of other socio-economic variables.

5.5 GENERAL GROWTH REGRESSIONS

In section 5.4, specifications investigating the prediction of the Solow model are estimated. However, the literature on growth regression normally involves the estimation of more

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[20] 10 years average as compared to 20-30 year period used by several other authors.

general specification with several explanatory variables. In this section, the benchmark model, as indicated in chapter 2, is estimated while subsequently adding different socio-economic variables (several of those used in previous studies) to test for the robustness of the Solow model variables and the key variables in this study. This is done in both a single cross section and panel framework.

5.5.1 Single Cross Section Analysis

Results of the single cross section analysis are shown on tables 5.5.1 and 5.5.2. The focus of the discussion is on whether the relationship between GDP per capita growth and key socio-economic factors (especially refugees and conflict) is significantly positive or negative. The last section of this chapter then looks at the relevance of the results by explaining the economic and practical significance of the results as well as by relating results of the current study to previous relevant studies. This section also estimates the impact of conflict and refugees on differences in growth between regions using the single cross section regression results as a way of backing up the practical significance of results.

The method adopted here is a 'forward step-wise regression' whereby specifications progressively increase the number of variables. Variables were entered in turn, their significance checked and sometimes similar variables (from different sources) substituted for each other in various specifications. These are then separated in columns marked 1 to 12 depending on the table being discussed. In the first column of table 5.5.1 the benchmark specification of this study (see chapter 2) is estimated. The first thing to observe about the results in this column is that the empirical version of the model produces parameter estimates with effects as predicted by the associated theory. Although not all effects are statistically significant, the population growth rate and gross capital formation (referred to as investment) are negatively and positively statistically significant. Conflict carries the right sign of its effect on GDP per capita growth and it is statistically significant. Second, by conventional goodness-of-fit measures, this model explains 40% of the cross country variation in growth rates.

In the second column, an additional variable expected to increase GDP growth is included. This variable is one of those used as a proxy for human capital: the log of life expectancy. The inclusion of the life expectancy variable in the model led to the significance of the initial GDP per capita variable, further confirming evidence of conditional convergence in the data. All

other variables show results consistent with the prediction of the model. This specification led to an increase in the explanatory power of the model from 40 to 45%. A peculiar aspect of this model, is that the refugee variable switched sign.

Adding the illiteracy rate to the benchmark model produces very striking results. The refugee variable re-takes (from the previous specification) its sign while the conflict variable maintains its significant effect. Life expectancy still maintains its positive and significant effect on growth. An alarming aspect of this specification, however, is the sign and significance level of the illiteracy rate which was expected to have been negative. The model explains about 47% of cross country variation in per capita growth.

In column 4, all variables seem to maintain their signs except for the refugee variable, which, again, changes its sign. Conflict maintains its negative and significant effect on GDP growth. The new variables included in this specification are government consumption as a percentage of GDP and trade (openness). Both variables are insignificant. The explanatory power of the model drops to 44% with the inclusion of these two variables.

A new set of data for conflict from a different source is introduced in the fifth specification. This is meant for the use of diversity (in sources of conflict data) in verifying results. Even with this variable (sipricon), conflict continues to indicate a mildly significant negative effect on growth. The fifth specification is almost the same as the second, with the difference linked to conflict being substituted for by another conflict variable. In fact, the explanatory power is almost the same: 44%.

In the sixth and seventh columns, substitution for the conflict variable (as explained in chapter 3) continues. In the sixth column, an estimation to see the effect of the types of conflict is carried out. Since minor and intermediate conflict and war are dummy variables independent of each other, they are used jointly. The results show that minor conflict has a negative and significant effect on growth. The seventh specification is very much like the sixth but the former used the cumulatively coded conflict variable (see coding of variables discussed in chapter 3). This time minor conflict shows a positive but insignificant effect while war continues to show an insignificant negative effect. The explanatory powers of these two models are, however, higher (45 and 44%) than the specification in column 1 (40%) which

groups all types of conflict into one. This suggests that the model with different types of conflict explains growth rate differences among countries better than the model assuming all conflict to have the same magnitude.

In the eighth column, a specification to see the effect of fractionalization (as suggested by the work of Alesina *et al*, 2003) is estimated. Three variables are used as measures of fractionalization: ethnicity, language and religion. Since the first two variables are highly correlated, this specification uses one of these variables, at a time, in combination with the religion variable which is not correlated with any of the first two. Both variables are insignificant but of the right sign as obtained in Alesina *et al*. These are not unusual results compared to those obtained in the literature. Ethnicity in Alesina *et al* loses its significance when more variables are controlled for.

The ninth column tries the main specification with an alternative variable that looks at the effect of human capital on growth. This variable is a measure of the adults older than 25 years' average schooling. These variables have been tried individually and the results on the total years of schooling are reported since they are not significantly different. The variable also suffers from a sign reversal fate like the variable on illiteracy. The model with total years of schooling, however, has the highest explanatory power of 51% for all specifications in the single cross section followed by the model in column 3 with illiteracy rate. Although both variables have the opposite signs as expected, the results of the explanatory power of these two specifications indicate that education variables are good proxies for human capital in explaining growth rate differences among countries in the Solow model framework. In the tenth column, secondary school enrolment rate enters the specification with the opposite sign but also insignificant. The explanatory power of the model with the school enrolment variable is very close to the one with illiteracy.

The 11th column replaces the percentage of refugee variable and considers the effect of having refugees generally. The absolute number of refugees shows a positive but insignificant effect on growth. The explanatory power of the model is encouraging with several significant variables especially for investment, population growth rate and life expectancy. A country being landlocked shows a negative insignificant effect on growth.

As a transition to the next sub-section on regional growth regression, column 12 estimates the specification in column 2 but adds regional dummies to the former. The dummy variables on sub-Saharan Africa are significant and negative; the other region's dummies are also negative. Other trials were also estimated wherein the dummy on Asia is included, dropping Latin America or North Africa. Each time Asia is included with sub-Sahara Africa, the latter remains negative but insignificant while the former is positive and almost significant. The results indicate that the effects of refugees differ from region to region, a conclusion which will be analysed in more detail in the next section.

Table 5.5.1 : The effects of refugees and conflict on economic growth
(Dependent variable is growth of per capita GDP)

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Loggdp	-0.287 (-0.87)	-1.164 (-2.60)	-0.991 (-2.04)	-1.159 (-2.37)	-1.133 (-2.52)	-1.128 (-2.50)	-1.004 (-2.19)	-1.179 (-2.61)	-1.555 (-2.36)	-1.162 (-2.30)	-1.280 (-2.83)	-0.873 (-1.81)
popgr	-1.175 (-2.52)	-0.797 (-1.71)	-1.322 (-2.90)	-0.742 (-1.42)	-0.783 (-1.67)	-0.718 (-1.52)	-0.661 (-1.40)	-0.804 (-1.68)	-1.062 (-2.02)	-0.933 (-1.93)	-0.831 (-1.80)	-0.565 (-1.15)
grcapfom	0.182 (5.06)	0.159 (4.50)	0.146 (4.29)	0.167 (3.72)	0.162 (4.55)	0.159 (4.44)	0.171 (4.74)	0.157 (4.38)	0.142 (3.48)	0.158 (4.37)	0.159 (4.53)	0.168 (4.50)
Perref	-0.079 (-0.41)	0.036 (0.19)	-0.128 (-0.53)	0.038 (0.20)	0.076 (0.41)	0.008 (0.05)	0.124 (0.66)	0.025 (0.13)	-0.077 (-0.27)	0.036 (0.19)		-0.006 (-0.03)
Confdum	-0.798 (-1.63)	-0.768 (-0.64)	-0.933 (-2.10)	-0.805 (-1.63)				-0.875 (-1.75)	-0.884 (-1.52)	-0.662 (-1.38)	-0.766 (-1.70)	-1.119 (-2.06)
loglixp		6.270 (2.77)	7.400 (2.63)	6.363 (2.68)	6.077 (2.65)		6.317 (2.75)		10.592 (3.38)	6.840 (2.68)	5.868 (2.66)	3.654 (1.23)
Illitini			0.031 (2.13)									
openess				-0.005 (-0.42)								
govcons				0.015 (0.30)								
Sipricon					-0.679 (-1.29)							
Dmincon						-0.776 (-1.71)						
Dintcon						0.574 (0.93)						
Dwar						-0.497 (-0.79)						
Ymincon							0.084 (0.84)					
Yintcon							0.119 (1.24)					
Ywar							-0.137 (-1.38)					

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
ethnic02[21]								-0.407 (-0.39)				
Religion								-0.546 (-0.39)				
absref											2.520 (0.04)	
lalockt										-0.777 (-1.38)	-0.799 (-1.44)	
School										-0.156 (-0.97)		
Tyr90[22]									-0.287 (-1.20)			
SSA												-1.389 (-1.63)
L. America												-0.575 (-0.73)
N. Africa												-1.226 (-1.15)
Constant	2.147 (0.64)	-16.913 (-2.23)	-22.401 (-2.22)	-17.49 (-2.23)	-16.705 (-2.17)	-15.930 (-2.02)	-19.520 (-2.53)	-14.110 (-1.67)	-29.349 (-2.95)	-18.249 (-1.38)	-14.128 (-1.90)	-8.095 (-0.78)
N	71	71	67	71	71	71	71	71	53	70	71	71
R^2	0.44	0.50	0.53	0.50	0.49	0.51	0.51	0.51	0.57	0.52	0.52	0.52
$\overline{R}^2$	0.40	45	0.47	0.44	0.44	0.45	0.44	0.44	0.51	0.46	0.46	0.45

[21] Results on the two other variables-religion and language-used in the Fractionalisation paper are not shown because the are very similar to the results of ethnicity reported here but are far from being significant

[22] Results using the female and male total years of schooling produce similar effects as that on the total population years of schooling when used alternatively. They also show a negative and insignificant effect on growth. The three variables tyr90, tyrm90 and tyrf90- only become significant when used jointly but since they are highly correlated these results cannon be relied upon.

5.5.2 Results on Regional Effects of Conflict and Refugees on Economic Growth

Following the results on regional dummies in table 5.5.1 which suggest that the effect of refugees is negative and significant in sub-Sahara Africa and negative but insignificant for other regions, and with Asia showing a positive effect of refugees in other specifications where the Asian dummy is used (results not shown), this section estimates specifications with regional observations to verify this finding. Further, since the single cross section regression method does not take country specific effects into consideration, and classifying all countries, irrespective of their unique characteristics into one group could provide 'not very clear results', this section classifies countries within the same region. Countries in a region are more likely to share similar characteristics, especially economic development ones. Therefore, results might be region sensitive.

Table 5.5.2 shows results of regressions estimated by region. For each region, there are four specifications; the first two columns include the main specification using the percentage of refugees and absolute number of refugees alternatively. The last two include, in addition to the main specification, the proxy for human capital variable and also alternate the use of the two refugee variables. In all of these specifications the 'confdum' is selected for the conflict variables since it maintained a constant statistically significant level in almost all specifications. Note that there is no specification for North Africa since samples are too small (4) to qualify for a specification.

In sub-Saharan Africa, the initial per capita GDP and population growth rate carry their predicted signs, but both variables are not significant. Investment is highly significant in this region. The effect of refugees on growth is evident, if only variables were going to be explained by their signs. Both types of the refugee variable in different specifications were consistent with regards to the negative sign but they are insignificant. Conflict also shows a negative effect on growth. These models explain up to about 40% of growth differences between 40 countries in sub-Saharan Africa. In Asia, initial GDP carries a negative and significant coefficient, consistent with a conditional convergence effect. But the effect of investment is surprisingly insignificant, considering that this variable has been robust across different specifications in table 5.5.1. The results on the effects of refugees on growth in this region are positive but insignificant although this variable is almost significant at a point. Similarly, the conflict variable is negative and insignificant in initial specifications and further

loses significance in subsequent specifications. In Asia, these specifications explain about 54 to 60% of growth differences among the 13 of the 14 countries selected. Population growth seems to significantly reduce growth in Latin America while investment busts growth significantly. Refugees also show a positive and significant effect on growth while conflict affects growth negatively. These models explain about 35 to 50% differences in per capita growth among 14 Latin American countries.

The results in table 5.5.2 confirm the dummy variable results in column 12 of table 5.5.1 An increase in the flow of refugees in Africa has a different effect from an increase in Asia and Latin America. However, this also suggests that the magnitude and direction of refugees' effect on economic growth could better be determined by carrying out a more comprehensive regional, or even country, specific analyses.

Table 5.5.2: Regional effects of refugees and conflict on economic growth
(Dependent variable is growth of per capita GDP)

Variable	Sub-Saharan Africa				Asia				Latin America			
	(1)	(2)	(3)	(4)	(6)	(5)	(8)	(7)	(9)	(10)	(11)	(12)
loggdp	-0.227	-0.327	-0.607	-0.782	-2.557	-2.507	-2.463	-2.355	-1.763	-2.17	-2.804	-4.395
	(-0.47)	(-0.76)	(-0.98)	(-1.25)	(-3.40)	(-3.26)	(-2.31)	(-2.20)	(-1.39)	(-1.68	(-1.33)	(-2.30)
popgr	-0.510	-0.515	-0.518	-0.547	-1.616	-1.618	-1.725	-1.801	-2.044	-1.830	-2.029	-2.091
	(-0.67)	(-0.69)	(-0.68)	(-0.73)	(-1.89)	(-1.84)	(-1.41)	(-1.45)	(-1.91)	(-1.86)	(-1.83)	(-2.24)
grcapfom	0.170	0.188	0.182	0.167	0.080	0.087	0.070	0.070	0.263	0.261	0.168	0.071
	(4.40)	(4.15)	(3.84)	(3.44)	(0.70)	(0.72)	(0.49)	(0.48)	(2.62	(2.64	(0.90)	(0.45)
perref	-0.080		0.002		0.345		0.335		1.462		1.157	
	(-0.32)		(0.01)		(1.45)		(1.25)		(1.22		(0.87)	
absref		-2.120		-2.230		4.900		4.690		0.00002		0.00002
		(-0.97)		(-1.08)		(1.29)		(1.12		(1.36)		(1.75)
Confdum	-1.067	-0.126	-0.775	-0.886	-1.095	-1.046	-1.143	-1.129	-2.151	-3.414	-1.901	-2.332
	(-1.52)	(-1.65)	(-1.01)	(-1.25)	(-1.21)	(-1.13)	(-1.10)	(-1.06)	(-1.21	(-2.51)	(-1.01)	(-1.60)
loglixp			3.927	4.298			-0.682	-1.153			9.768	19.386
			(0.98)	(1.15)			(-0.14)	(-0.23)			(0.63)	(1.50)
Constant	-0.540	0.545	-13.053	-12.534		23.008	26.134	27.391	15.89	19.981	-14.832	-129.44
	(-0.12)	(0.12)	(-0.96)	(-1.02)		(3.84)	(1.31)	(1.35)	(1.32	(1.64)	(-0.30)	(-2.18)
Number	40	40	40	40	13	13	13	13	14	14	14	14
R^2	0.47	0.47	0.47	0.49	0.78	0.77	0.79	0.77	0.63	0.65	0.65	0.73
$\bar{R}^2$	0.38	0.39	0.38	0.40	0.62	0.60	0.56	0.54	0.40	0.42	0.35	0.50

The lesson learnt from the results in table 5.5.2 is that the effect of refugees varies from region to region; this probably is linked to the differences in growth rate of per capita GDP in the regions. Therefore, it is also expected that the effect of refugees on the economic growth of countries will differ by the starting capita GDP of different countries. The next section now estimates specifications with different per capita GDP thresholds to determine the effect of conflict and refugees on these thresholds.

5.5.3 Refugees in Rich and Poor Countries

Results in previous sections offer insight into thinking that refugees may not have the same effect in all countries. An interesting question at this stage would be to investigate the effect of refugees on the 'status quo' of the host country. The aim is to ascertain how refugees and conflict affect GDP growth rate among countries that started off poor (low initial GDP per capita) and those which started of rich (with high initial GDP per capita).

A fundamental problem that arises in answering this question is how to distinguish rich and poor economies. International definitions with a global perspective exist. However, since this study is limited to developing countries, rich and poor countries have to be defined to suit the sample in the study. The initial level of per capita GDP has been selected as a yard stick on which wealth and poverty are determined.

This sub-section estimates a restricted (based on the initial GDP per capita) regression to observe the behaviour of the refugee variable. Only the 'main specification' (as specified in chapter two) is used in this case. The first specification uses the average initial GDP per capita of the sample, which is $2705. This GDP level also falls in the World Bank category of lower middle income countries which follows the low income countries. All countries (45 out of 72) with a per capita GDP below this value are considered poor and those above (26 out of 72) are considered rich for the analyses of this section. Similarly, the GDP level of $2935 (GNI per capita) is defined as the upper middle GDP countries. In my data set, 46 countries are below this GDP and 25 above. Note also that any country below this GDP group is implicitly in the lower middle GDP ($736-$2935). This can be seen by examining the results in column 1 and 3; the parameters change very slightly between these two GDP groups. A threshold of $1500 is also used but this is to test for the consistency of results, column 5 and 6 are created with arbitrary GDP level.

The results are very consistent with economic theory and intuitive reasoning. Population growth is negative and significant, but the effect is heavier on 'richer' countries (columns 2, 4 and 6). Conversely, investment (grcapfom) produces better results on poorer countries. It is positive and significant for all lower thresholds and contrary for higher levels of GDP (columns 1, 3 and 5). The main variable in this specification is hard to interpret by its significance level except in column 5 where it is significant. Testing these results on further lower GDP brackets indicates that refugees impair growth in poor countries most. Even when the absolute number of refugees is replaced for the percentage of refugee variable, the results show the same sign order but also insignificant -- results not shown. The effect of refugees on 'low GDP' ($735 and less, as defined by the World Bank) countries would have been tested but there are not enough samples in this bracket. Conflict is negative at all times and highly significant (at the 1% level) in the two highest GDP level (column 2 and 4) and almost significant in column 6 as well. The goodness of fit measure is higher for models (column 2, 4 and 6) for richer countries than for poorer countries. These models explain about 43 to 56% of growth differences for countries with up to $2935 per capita GDP.

Table 5.5.3 The effects of refugees on rich and poor countries
(Dependent variable is growth of per capita GDP)

Variable	(1) <=2705	(2) >=2705	(3) <=2935	(4) >=2935	(5) <=1500	(6) >=1500
gdpini	-0.0004	-0.0004	-0.0003	-0.0004	-0.003	-0.0001
	(-0.67)	(-3.08)	(-0.49)	(-2.77)	(-1.33)	(-1.20)
popgr	-1.163	-2.027	-1.188	-2.006	-1.351	-1.272
	(-1.67)	(-4.23)	(-1.69)	(-4.07)	(-1.16)	(-2.86)
grcapfom	0.200	-0.066	0.199	-0.062	0.162	0.168
	(4.35)	(-1.00)	(4.37)	(-0.92)	(2.71)	(3.32)
perref	-0.153	0.181	-0.158	0.191	-0.921	0.097
	(-0.59)	(0.80)	(-0.61)	(0.82)	(-1.63)	(0.59)
Confdum	-0.672	-2.420	-0.656	-2.424	-0.739	-0.804
	(-0.92)	(-4.18)	(-0.91)	(-4.10)	(-0.72)	(-1.57)
Constant	0.194	10.411	0.112	10.166	3.882	0.918
	(0.08)	(3.64)	(0.04)	(3.41)	(0.93)	(0.43)
No. of Obs.	46	26	46	25	28	43
R²	0.44	0.64	0.44	0.65	0.47	0.49
Adj	0.36	0.56	0.37	0.55	0.35	0.43

(t-statistics are in parentheses). See table 4.8 for definition of variables.

After the estimation and discussion of the results of the single cross section, the next task of this chapter is to estimate and discuss results of the panel data set.

5.6   PANEL DATA ANALYSIS

Specifically, the panel data approach used in this study estimates fixed-effects models (using the within regression estimator) and random effects models using the GLS estimator. Both models are estimated for the same specification in every case. The Hausman test[23] is then carried out and the preferred model chosen base on the result of this test. There are 5 specifications in table 5.6. In each of these equations, the chi square result implies that the fixed effect model is preferred in all the 5 cases. The discussion of results is, therefore, limited to the results of the fixed effect model.

Table 5.6 is almost a reproduction of table 5.5.1. The difference is that the former probes the effect of socio-economic variables on GDP per capita growth in the short run while the latter examines the consequences of these factors on growth in the long run. However, not all columns[24] in table 5.5.1 are reproduced in the panel analysis because the latter takes the best short-run models.

Column 1 reports the results of the main specification and subsequent specifications add more variables except in column 5, where the 'absolute number of refugees' variable is substituted for the percentage of refugee variable. The panel data, seeking to confirm or reject the convergence theory, strongly confirms the theory. The initial GDP per capita is significantly different from zero with a negative sign in all the 5 specifications. These results are similar to the effect of population growth on short run GDP per capita growth in terms of the significance level. Nevertheless, population growth is significantly positive in most specifications in relation to short run per capita growth[25], contrasting with the neoclassical growth theory. Investment positively affects short run growth being significant at the 0.01

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[23] Hausman is a general implementation of Hausman's (1978) specification test that compares an estimator that is known to be consistent with an estimator that is efficient under the assumption being tested. The null hypothesis is that the efficient estimator is a consistent and efficient estimator of the true parameters. If it is, there should be no systematic difference between the coefficient of the efficient estimator and a comparison estimator that is known to be consistent for the true parameters. If the two models display a systematic difference in the estimated coefficients, then we have reason to doubt the assumption on which the efficient estimator is based.

[24] Columns 5 to 9 have been dropped. Column 5 looks specifically at the effect of sipricon which is just an alternative for confdum. Columns 6 and 7 observe the disaggregated conflict data effect, and 8 and 9 include time invariant variables (ethnicity, language and religion) which cannot be estimated with the fixed effect model. The confdum is, however, doing well without the other alternative conflict variables. These models were estimated but results are not shown because they have a poor fit, the models shown are sufficient for the aim of the study.

[25] This could be due to reverse causality between economic growth and population growth, wherein growth in the former in the short run might attract migration increasing the latter.

level and at the 0.05 level at other times. These results are consistent with theory. The variables mentioned are key elements of the traditional growth model. The interest of this study goes well beyond estimating the empirical relationship between the 'traditional determinants of growth'. The models incorporate refugees and conflict variables as key factors in addition to other socio-economic factor. By so doing, they reduce the factors in the error term.

Both variables on refugees are not significantly different from zero by standard statistical levels indicating that there is no statistical relationship between refugees and growth in the short run. The goodness of fit of these two models also differs; the specification with percentage of refugee variable explains the model better. The relationship between short run per capita growth and conflict is difficult to describe. Eventually, in almost all cases (except column 4) the conflict variable retains the 'expected' sign but it is not statistically different from zero at standard levels of confidence. This level of (in) significance, like the refugee variable, improved as more variables were added to the model. The coefficient on initial illiteracy rate is not statistically significant at standard significance levels, but this variable takes on its 'right' sign on its effects on short run growth as opposed to the results of the effects of illiteracy on long run growth (table 5.5.1, columns 3). I have found no link between illiteracy and economic growth either in the short or in the long run. On the whole, the fixed effects model, with refugees and conflict as key factors, explain up to 76% of differences in per capita growth of GDP in the short run. The effects of the variables controlled for on growth in the second period cannot be predicted since the period (the first period is used in all specifications) dummy variable is not significant.

Table 5.6: The effects of refugees and conflict on short run economic growth (Dependent variable is growth of per capita GDP)

Variable	(1) FE	(1) RE	(2) FE	(2) RE	(3) FE	(3) RE	(4) FE	(4) RE	(5) FE	(5) RE
loggdp	-15.05	-0.30	-17.24	-2.07	-16.73	-1.80	-16.47	-1.94	-17.16	-1.97
	(-11.95)	(-0.64)	(-9.62)	(-3.15)	(-8.47)	(-2.52)	(-8.31)	(-2.64)	(-9.10)	(-2.77)
popgro	-0.59	0.33	0.60	0.65	0.61	0.46	0.58	0.43	0.60	0.49
	(2.29)	(0.96)	(2.23)	(2.01)	(2.15)	(1.34)	(2.05)	(1.22)	(2.11)	(1.45)
Grcpfom	0.09	0.06	0.11	0.06	0.11	0.06	0.10	0.05	0.11	0.04
	(2.60)	(1.62)	(3.00)	(1.78)	(2.43)	(1.52)	(2.28)	(1.37)	(2.47)	(1.22)
perref	0.00	-0.25	-0.17	-0.15	-0.21	-0.18	-0.26	-0.20		
	(0.01)	(-1.35)	(-0.64)	(-0.79)	(-0.72)	(-0.90)	(-0.88)	(-0.97)		
Confdum	-0.40	-0.30	-0.55	-0.68	-0.68	-0.67	-0.85	-0.70	-0.65	-0.59
	(-1.00)	(-0.60)	(-1.20)	(-1.40)	(-1.35)	(-1.30)	(-1.61)	(-1.35)	(-1.30)	(-1.16)
Gfdi			0.12	0.03	0.13	0.05	0.14	0.05	0.13	0.04
			(1.70)	(0.48)	(1.76)	(0.59)	(1.87)	(0.58)	(1.71)	(0.57)
Loglixp			6.35	12.24	7.66	10.70	8.08	11.23	6.88	11.38
			(0.90)	(4.08)	(1.01)	(3.10)	(1.06)	(3.18)	(0.91)	(3.27)
Illitini					-0.10	-0.01	-0.14	-0.01	-0.09	-0.01
					(-0.78)	(-0.40)	(-1.04)	(-0.46)	(-0.70)	(-0.34)
openess					-0.01	-0.00	-0.00	-0.01		
					(-0.34)	(-0.43)	(-0.13)	(-0.61)		
govcons							0.07	0.04		
							(1.09)	(0.78)		
absref									-2.48	1.53
									(-0.29)	(0.03)
Constant	112.42	0.81	104.40	-35.70	99.29	-30.55	96.17	-31.78	104.84	-32.31
	(11.70)	(0.22)	(3.60)	(-3.92)	(3.16)	(-2.62)	(3.05)	(-2.68	(3.44)	(-2.71)
Per1dum	-0.20	0.59	0.01	0.78	0.58	0.85	0.82	0.81	0.46	0.81
	(-0.70)	(1.49)	(0.02)	(1.90)	(0.67)	(1.88)	(0.92)	(1.79)	(0.57)	(1.84)
N	143	143	124	124	115	115	115	115	117	117
R^2	0.71	0.11	0.76	0.34	0.76	0.34	0.77	0.36	0.76	0.30
χ^2	0.000		0.000		0.000		0.000		0.000	

(t-statistics are in parentheses), Fixed effects estimated by between estimator and Random effect by GLS

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The analysis of panel data was also intended to include regional regressions to spot the differences (by region) of the short run effect of refugees and conflict. This was done but results are not presented since they are inconclusive possibly due to fewer numbers of observations.

In the next section I discuss the results, drawing on the previous relevant studies in order to further analyse the results in relation to their practical relevance for this study.

5.7 SUMMARY OF GROWTH REGRESSION RESULTS

Much of the recent empirical growth literature has evaluated growth theories by fitting cross-sectional regressions that relate the average growth rate of real per capita GDP over some period for a sample of countries to the initial value of per capita GDP or output and country characteristics. The method of estimation for these growth regressions, according to Evans (1997), has virtually always been ordinary least squares, like in this study. In the following, the practical relevance of the outcome will be discussed while making reference to the results of related studies.

Since I have emphasized statistical significance throughout the section discussing the results, it is important to be attentive to the magnitude of the coefficient estimate in addition to the size of the t-statistics[26]. All results have been discussed based on the direction of the signs and level of statistical significance. Little or nothing has been said on their economic significance which looks at the magnitude of the coefficients, and further which relates the results to economic theory and real world occurrences. It is important, in practice, to distinguish between statistically significant t-statistics and economic magnitude. As Wooldridge (2000) noted, too much focus on statistical significance can lead to the false conclusion that a variable is 'important' for explaining y even though its estimated effect is modest. Closer examination of the results reveals some weak statistical relationships between the dependent variable and independent variables, both of which were surprising and contrary to economic theory predictions. This section wants to establish that the lack of significance does not necessarily mean that there is no relationship. A further glance at the magnitude of parameters might bring out valuable relationship between the variables under study. It will be, however,

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[26] The statistical significance of a variable X_i is determined entirely by the size of t, whereas the economic significance or practical significance of a variable is related to the size (and sign) of β and by the definition of the t statistic, $t\beta_i$, can indicate statistical significance either because β_i is 'large' or because $Se(\beta_i)$ is 'small'.

limited to the conflict, refugee variables, and a few of the socio-economic variables believed to be of more relevance for this study in relation to the theoretical model used as a framework.

Investment (gross capital formation) is one of the traditional variables in growth regressions, reflecting the contribution of capital accumulation to output growth in the transition to steady state. This very important factor for economic growth is seriously affected by conflict since the latter maintains a constant negative effect on both variables in table 5.1. In situations of conflict, investors adopt a 'wait-and -see' attitude, a particularly dangerous strategy that may go on indefinitely. In fact, Bleany's (1994) study found the negative effects of political uncertainty to be permanent, suggesting that political instability does not merely create a wait-and-see attitude among investors, but that investment may be permanently lost.

Uncertainty has always been regarded as critical in influencing development. Political instability, however, unlike several other socio-economic variables, has only begun to be systematically established as a determinant of growth in the cross-country regression model (Elbadawi and Ndulu, 2001). Kumar and Mlambo (2001) concur by postulating that it is only more recently that political stability has received explicit attention in the modelling of economic growth in developing countries. This study will add to this body of knowledge by filling in the bemoaned need for the inclusion of these variables -- refugees and conflict especially -- into the traditional growth model. The results on the effects of conflict on growth, thus, compliment and extend the study by Collier and Hoeffler who observed this factor and growth in several papers.

The negative coefficient on initial GDP in table 5.5.1 is, as in most published growth regressions, interpreted as conditional convergence, while investment (gross capital formation 5.5.1 and 5.5.6) is positive and population growth is negative as suggested by the Solow model. In table 5.5.2, initial condition is negative for all regions and significant for the Asian and Latin American data, indicating that countries with similar characteristics are more likely to converge. This is what is referred to as conditional convergence. Again, the smaller β (initial GDP) is, the faster this convergence takes place. Similarly, Barro and Sala-i-Martin (1992) found out that poor US states tended to grow faster in per capita terms than rich US states over periods from 1840 to 1998, by holding only initial per capita GDP constant. US states are similar to each other in production technology and saving behaviour. Countries of

the whole world show much more diversity by cross country regressions results when countries in the three regions are combined, as this study reveals. Under the maintained assumption that countries within the same region in the sample have identical growth dynamics, one can then infer that countries within the same region converge toward parallel balanced growth paths, and thus have identical trend growth rates. For this reason, estimates lead to the rejection of those growth theories that predict global cross-country variation in trend growth rates (absolute convergence) and embrace those theories that emphasise regional cross-country variation (conditional convergence). For this reason, this study accepts the convergence theory and confirms that Asia and Latin America are catching up faster than sub-Sahara Africa.

The results on the effects of refugees on growth point towards regional differences. It is insignificant but negative on sub-Saharan Africa's growth presumably because of its lowest initial GDP of $1977 and its negative per capita GDP growth rate of -0.34 on average. Whereas, in Asia and Latin America with an average growth rate of per capita GDP of 2.27, 0.61 and initial GDP per capita of $2149, $4980, refugees show a positively significant (only in the Latin American case) effect on economic growth. This might also be interpreted to mean that economically viable regions could provide an environment conducive to the flourishing of refugees, which would, in turn, influence growth positively[27]. The explanatory power of the models is very strong, with sub-Saharan Africa having up to about 40%, and up to 60% and 50% for Asia and Latin America's growth differences respectively, being explained by these specifications.

Another very important point to note about the effect of refugees on growth is the differences of the results between the two refugee variables used. The percentage of refugee variables produces better results than the absolute number of refugees. This evokes the interesting view that having many refugees may not be a problem per se, so much as having too many refugees relative to the host population. This is further suggestive of the burden refugees pose when they are concentrated in specific parts of a country often in accordance with the policy of many developing countries. Unfortunately, refugees are normally located in poorer regions where they crowd on limited facilities (water, medical aid, food, etc) and, therefore, pose a

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[27] This study will continue the search for such traces by further probing the effects of the demographic structure of refugees on per capita GDP growth of receiving countries.

heavier burden than they would have, had they been more evenly distributed in the host country. The results on table 5.5.2 further confirm the popular view on refugee discourse: hosting refugees should not only be seen as constituting a burden leading to negative impact on growth but also as a possible source for positive impact on growth. This suggests that refugees do come with their skills and the provision of enabling environments might elicit positive results. Moreover, this depends on the demographic structure of refugees since a higher dependency ratio will only bring in more problems for developing countries. That the number of borders a country has provides a direct route into access for refugees to enter into a possible host country is obvious even to non-economists[28].

Results of the conflict variable have been, to a very large extent, consistent with economic theory; they also match what the literature on conflict and economic growth suggests. Conflict remains consistently negative on growth irrespective of the source of data; it also shows a strong inverse relationship to growth. The magnitude (hence the effect) is stronger the more statistically significant the conflict variable is. Increasing conflict by one more year or moving from a non-conflict to a conflict situation leads to 0.7 up to a 1.1 percentage point reduction in the long run economic growth (table 5.5.1). In table 5.5.2, conflict is negative for all specifications on sub-Saharan Africa and Asia. The effect of conflicts on Latin America's economy is consistently negative and significant most times. This might be due to the total number of countries in conflict for every region. About (50%) of Sub-Saharan Africa's 40 countries experience conflicts; whereas Asia and Latin America have 12 out of 14 countries each (about 86% of the total sample) in conflict, which could have reflected a greater impact for the entire region.

The practical significance of the variables in table 5.5.3 reflects their effect on the different types of economies. The growth rate of the population reduces growth in richer countries much more than it does for poorer countries. In column 3 and 4 for example, population growth reduces long run growth by 1.2 percentage point in poor countries but it does so by nearly 2 percentage points for richer countries. In addition, the strong effect of conflict on rich economies might suggest the opportunity cost of rebel labour (see section 5.5.1). The higher a country's per capita GDP the more pinch it feels when its human capital decides to 'stop work and go to war'.

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[28] Chapter 6 tests this proposition.

Investment, conversely, becomes negative for richer countries in table 5.5.3, probably signaling the effect of diminishing returns. This could be attributed to the concept of diminishing return of capital: the richer you are the more physical capital you are likely to acquire. For increased productivity, physical capital should be accompanied by human capital. The rate of growth of human capital in the long run (proxied by the birth rate) is expected to reduce as GDP rises; in the long run, physical capital effect will diminish.

A good question to ask here, in light of the convergence theory, is: why has sub-Saharan Africa not been converging even though it has a lower (in fact the lowest) initial per capita GDP? First, the GDP growth performance of this region has been weak and population growth has been high. The literature provides evidence to demonstrate that despite Africa's relatively low initial GDP levels, it could not benefit from an initial 'catch-up' effect owing to its even lower (in a comparative sense) human capital indicators (Elbadawi, 2001). The traditional view of development economics has been that capital accumulation is a fundamental cause of economic growth, and that differences in stocks of capital (human as well as physical) across countries are a prime determinant of the corresponding differences in national GDPs. Human capital accumulation is known to enhance economic growth in two ways: first, it is a direct input to research, and, secondly, it generates positive externalities. Above all, human capital development is an attractive enticement for investors. Elbadawi and Ndulu (2001) agreed that a higher level of human capital enhances the ability to absorb new technologies, and, hence, triggers a higher rate of growth for a given level of physical capital.

The literature on the determinants of long-run growth has long emphasized the role of human capital as an important element in explaining cross-country differences in growth and investment. For example, studies by Barro and Lee (1991), MRW (1992) and Khan and Kumar (1993) found a positive effect of the initial stock of human capital on per capita GDP growth. The theoretical rationalization of this was provided by Lucas (1988) who, in the context of analyzing factors underlying long run development, stressed that human capital affects the productivity of all other factors of production.

The strange sign on illiteracy of this study, then, produces very contrary results to what economic theory, and common sense, on the effect of human capital on growth predicts. The

significance level, especially in table 5.5.1, even makes it worth noting. Even the alternative proxy for human capital (years of schooling from and secondary school enrolment) produced very contrary results. These variables have a very high magnitude, significant but have the completely opposite sign. The results suggest that illiteracy is positive for growth and the total years of schooling of the population older than 25 and secondary school enrolment is negative for growth[29]. These results are quite contrary to what Easterly (1997) noted, which is that, education is one of the sacred cows of development; its relationship to GDP across countries has been firmly established in the cross-section literature. But in his study, he also found similar contrary results while looking at the effect of education on GDP using a panel data approach. He lamented that the fixed effect and first-differencing estimators wreak havoc on these traditions. Such unquestionable dicta as literacy and primary enrolment become significant of the wrong sign in his fixed effects regression. The total years of schooling variable (tyrf) also behaves in a similar way in Barro's 1997 study. Female education showed a surprising negative effect on growth. However, this was because some factors, such as fertility, on which female education has an effect, were already held constant. In earlier results, Barro and Lee (1994) and Barro (1997) discovered that the estimated coefficient on female secondary and higher schooling was significantly negative. Therefore, the contradictory results on education variables (illiteracy, years of schooling and secondary school enrolments) in the current study are consistent with the experiences noted in the literature. These unusual results have been attributed to higher inequality in education across countries. 'Education inequality is associated with lower investment and, consequently lower growth' (Castello and Domench 2002:199)

The practical significance of variables in the panel data analysis seems to follow a similar pattern as those in the single cross section. The initial level of GDP produces results are in conformity with the convergence theory. Population growth, investment, refugees and conflict increase in magnitude as more variables are controlled for. Specifically, up to 0.11 percentage points of growth are gained by increasing investment by 1 percentage point. However, up to 0.85 percentage points of GDP per capita are lost because of conflict 1989 to 1995 and 1996 to 2000.

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[29] It is possible that the short time period (1990-2000) in this study led to such results since results on human capital investment are expected to be realized in the long term.

The models explained in the panel data analysis, using fixed effects, assume that time invariant factors are correlated with the regressors, so that the method removes these time invariant factors and estimates the model using the OLS technique. Since the random effect (which assumes that the time invariant factors are not correlated with the regressors) model is rejected, it means that the unobserved fixed effects were, indeed, correlated with the regressors; they have only been thrown out to increase the consistency of the results. However, these fixed effects should be considered in assessing the effects of conflict and refugees on short run per capita growth. They could be thought of as land and natural resources (forestry, rivers etc) which do not vary over time but might affect refugees' impact on the economy.

It has become clear that the results have significant economic effects, even if not robust ones. Several authors have noted that econometric simplification may account for the lack of robustness. The number of omitted variables may also lower significance levels. Further, coefficient estimates may reflect the interacting effects of a range of underlying variables rather than its individual effects on the dependent variable. However, the growth regression literature is well known for its lack of robustness (e.g. Levine and Renelt (1992), Sala-i-Martin (1997)). One under-appreciated source of this fragility is inconsistencies in data availability as O'Connell and Ndulu (2000) noted. As much as this is not a unique problem for this study, results could be said to be as insightful as most results in growth regressions. In the next section, I try to see how much of the growth differences within the region are explained by key variables in this study as a further clarification of the relevance of the results obtained.

Table 5.7 below calculates the differences in growth rates between sub-Saharan Africa and the three other regions; it explains how much of the growth rate differences between the regions is accounted for by differences in initial GDP per capita, differences in population growth rates, differences in investment, differences in the number of refugees the countries hosts and the differences in the number of years countries experienced conflict. The choice of these variables is based on their position as key variables of the study.

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Table 5.7.1 Conflict, refugees and their effects on Growth
Differences between the averages of key variables of
sub-Sahara Africa and other regions

	SSA-North Africa	SSA-Asia	SSA-Latin America
GDP growth	-1.36	-2.61	-0.95
Log of Initial GDP	-0.99	-0.27	-1.14
Differences Population	0.76	1.40	0.60
Differences in Investment	-5.55	-3.88	-0.59
Refugees (%)	0.73	0.40	0.68
Years in minor conflict	-0.7	-1.04	0.75
Years in intermediate conflict	0.35	-2.97	-0.83
Years in war	-1.05	-0.98	-0.05

Author's calculation

The table above shows that sub-Saharan Africa's average per capita growth rate between 1990 and 2000 is lower than all the other regions; the figures show by how much lower it is for each region. For example, sub-Saharan Africa grows by 1.36% less than North Africa, or, North Africa grows by 1.36% more than sub-Saharan Africa. Sub-Saharan Africa also has a lower initial GDP per capita than all the three regions, with the difference at its greatest between this region and Latin America. On average, sub-Saharan Africa hosts more refugees in relative terms than the three other regions. Minor conflicts last longer in North Africa and Asia than they do in sub-Sahara Africa, although the latter surpasses Latin America. Intermediate conflicts in Asia last about 3 years longer than those in sub-Saharan Africa. North Africa and Asia experienced longer periods of war compared to sub-Saharan Africa although this region experienced similar years in war with Latin America. The remaining task of this sub-section is to see how many of these differences in the variables explain the growth rate differences between sub-Saharan Africa and the other three regions. In the table that follows, the estimated coefficient of the variables in table 5.5.1 (results of the single cross section) is multiplied by the difference value in table 5.7.1 to get the percentage points which the variable explains the difference in growth rate. Results in column 7 of table 5.5.1 are used, since this specification estimates years in conflict as well.

Table 5.7.2:Explanation of key variables for growth rate differences between sub-Sahara Africa and North Africa, Asia and Latin America

Variables	Estimated Values of variables	SSA-North Africa Diff.		SSA-Asia Diff.		SSA-Latin America Diff.	
GDPini	-1.004	-0.99	0.99	-0.27	0.27	-1.14	1.14
Pop growth	-0.661	0.76	-0.50	1.40	-0.93	0.60	-0.40
Grcapform	0.171	-5.55	-0.95	-3.88	-0.66	-0.59	-0.10
Refugees	0.124	0.73	0.09	0.40	0.05	0.68	0.08
Ymincon	0.084	-0.7	-0.06	-1.04	-0.09	0.75	0.06
Yintcon	0.119	0.35	0.04	-2.97	-0.35	-0.83	-0.10
Ywar	-0.137	-1.05	0.14	-0.98	0.13	-0.05	0.01

Author's calculation

From the results in table 5.7.2, the growth rate difference of −1.36% between sub-Saharan Africa and North Africa is explained by 0.5 percentage point differences in population growth, 0.95 percentage differences in investment and 0.06 percentage point in the duration of minor conflict between these two regions. Of the -2.61% difference in growth between sub-Saharan Africa and Asia, 0.27 percentage point differences in initial GDP per capita accounts for that growth difference, 0.93 and 0.66 percentage point of population growth and investment explain the difference of 2.61% between the two regions. Conversely, the difference in growth rate between sub-Saharan Africa and Latin America is explained by 0.4 and 0.1 percentage points of population growth and investment. The observation from these results is that differences in population growth, initial conditions, and investment (key variables of the Solow model) explain greater parts of differences in growth rate of GDP between sub-Saharan Africa and North Africa, Asia and Latin America.

Results in this study have been fairly consistent with the theory of the growth model selected. In the next section, however, this study discusses a few country specific analyses.

5.8 COUNTRY SPECIFIC ANALYSIS

Alesina *et al* (2002, 18), observed that a "cross country statistical exercise is a crude way to summarize complex political and economic histories of countries and their constituent ethnic groups. A promising direction for future research would be for economists to do more case histories of development, economic policy, and government quality in ethnically diverse places, of the kind that the political science literature does." This study also recognizes such pitfalls in carrying out research on the effects of conflict and refugees on economic growth

and attempts to supplement this by briefly examining a few individual data points to illustrate pertinent effects and possible spill over effects of conflict and refugees on host countries.

Cross country regression results could be suggestive, but these should be cautiously interpreted since they may be based on very different countries. Even when countries are restricted within a region, specific country characteristics pertinent to the study might be important for the analysis. Another potential shortcoming of basing the current study on country-level data is that conflicts in different countries may be radically different in nature. Such heterogeneity may create problems when comparing the experiences of different countries and interpreting the results. Few case studies presented in this section look like the natural avenue to support the results given by cross-country studies. However, a major limitation of carrying research on a case by case basis is the incapability of conducting them on a large scale because of its time-consuming and impractical nature. Ideally, this section would have included all countries that are relevant for the study but that have been dropped because of missing data[30]. This, however, still produces a relatively large sample (11 countries) the sum total of which could not have been analysed in a sub-section of this chapter. Unfortunately, these countries could not be included even in the country specific analysis because missing variables (especially per capita GDP) are also important. Consequently, the analysis is limited to few countries whose selection is based on regional criteria; one country is selected from each of the three regions in sub-Saharan Africa. These countries' historical, political and economic background have been analysed to see how these relate with present conflict prevalence, a major determinant of refugee flow. Sambanis (2002) agreed that the empirical literature must be further developed, cautioning that civil violence is real and should not be studied abstractly without a conscious effort to link theory to reality.

Countries in sub-Sahara Africa have been selected since this region proved to be the most conflict affected region at the same time that it performed comparatively worst economically. Sub-Saharan Africa has great diversities, yet the 51 political entities of the regions share many common characteristics. They range significantly in terms of population size and economic scale. Given the vast diversity, it is accordingly difficult to draw general conclusions about the continent's economic performance as a whole during any given time and even more difficult

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[30] Relevance here is defined by a country either having a conflict in the time period under study and or its 'production' or hosting of refugees. See also table 4.11 for countries thrown out of the analysis because of missing data.

over a number of years. Nevertheless, some broad comparisons can be made. The region's overall economic growth rate during the previous 2 decades has been dismal (See table 1.4). By any economic or social indicator, sub-Saharan Africa performs worse than any other developing region. Of the 49 countries classified by the UN as 'least developed' in 2001, 34 were in sub-Sahara Africa. In many ways, this sub-region has found itself retreating economically, while other developing areas of the world are advancing strongly. The irony here is that sub-Saharan Africa contains the world's largest reserves of several strategic minerals, including gold, platinum, cobalt and chromium (Regional Surveys of the World 2003). In Congo DR, Liberia, Sierra Leone and Angola, for example, exports of natural resources sustained rebel movements and enabled the government to pay for foreign mercenaries and troops. This study attributes most of the downward growth in the economies of sub-Saharan Africa, and those of a few countries from other developing parts of the world, to the prevalence of conflict and the flow of refugees. A few countries are now selected for general analysis to test this hypothesis.

Three countries have been selected for analysis in this section: Sierra Leone for West Africa, Congo DR for East Africa and Angola for Southern Africa. A typical criterion in this selection (although the 3 countries are cases for sub-regions in sub-Saharan Africa) is the relevance of these countries for discussion. All three countries have experienced several years of conflict and have been major 'producers of refugees' but also have provided asylum to refugees from neighbouring countries. Table 5.8 provides a summary statistics of key variables in this study for the countries discussed in this section. The discussions proceed by giving a brief overview of the conflict situation of the country, provide an economic overview and discuss the relation of the selected cases to key variables of this study.

The case of Angola shows one of the longest conflicts in sub-Saharan Africa. Angola, with nearly 11 million people, has been plagued with conflict and outside intervention since its independence. Civil war has been the norm in Angola since independence from Portugal in 1975. Even before independence, several years of liberation wars had already been fought. Africa's longest lasting civil war between UNITA (the National Union for the Total Independence of Angola) and government forces ended when a ceasefire was signed, in March 2002, after UNITA leader Jonas Savimbi was killed.

Angola possesses rich and varied natural resources which could make the country one of the wealthiest in Africa The end of the war is expected to unlock Angola's enormous economic potential. After Nigeria, Angola is the second largest producer of oil in sub-Saharan Africa and the world's fourth largest producer of diamonds. However, Angola has been an economy best described as in disarray because of a quarter century of nearly continuous warfare. An apparently durable peace was established in 2002, but consequences from the conflict continue, most notably through the impact of wide-spread landmines. Subsistence agriculture provides the main livelihood for 85% of the population. Oil production and the supporting activities are vital to the economy, contributing about 45% to GDP and more than half of exports (CIA World Fact Book, 2003). The GDP per capita values for Angola started showing up only since 1985 on the WDI of the World Bank[31]. From observation of the GDP per capita ppp adjusted on the WDI, Angola is not characterized by a fall in GDP in the 1990s when its per capita GDP was at its highest value of $3,179 (PPP adjusted).

Angola received about 0.1% of refugees relative to its population between 1990 and 2000 though it experienced 9 years of war, 4 and 1 years of minor and intermediate conflict. Angola has 50% of its border in conflict (Republic of Congo and Democratic Republic of Congo), both countries in a war situation towards the end of the decade. This indicates that the spill over effects in the form of refugees stemmed from conflict in Angola's neighbouring countries. Conversely, approximately 3% of the Angolan population was in foreign countries in the early 90s. This number dropped drastically to less than a percent by the turn of the decade. This could be attributed to the seizure of hostilities between 1996 and 1997 when the Angolan conflict was registered as a minor conflict from its war situation between 1990 and 1994 and intermediate conflict in 1995. This suggests that the cross border movement of refugees in developing countries is closely linked to the prevalence of conflict in these regions, a subject which the next chapter explores.

The history of DR Congo has been largely characterised by the prevalence of civil war. The Democratic Republic of Congo (DRC) has experienced several rebellions and wars since its independence in 1960 (Léonce and Emizet 2003). In 1997, DRC (formerly called Zaire)

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[31] However, GDP per capita data is available for Angola from 1950 to 1998 in The World Economy: A Millennial Perspective (Maddisson 2002) but these figures are not used to maintain consistency of comparism.

experienced renewed fighting characterised by ethnic strife and civil war, sparked off by a massive inflow in 1994 of refugees from the fighting in Rwanda and Burundi.

The economy of the DRC, a nation endowed with vast potential wealth, has declined drastically since the mid-1980s. Per capita GDP in the 90s ($991) fell to almost 65% of their 1980 pre-conflict ($1557) values. Per capita GDP was still appreciable in the early 90s, with a value slightly above $1000. However, since 1993, per capita GDP was less than $900 (except in 1995 when it was $902). In 1997, towards the onset of the conflict, per capita GDP was around $790. Congo DR records a negative growth of per capita GDP of –8.39 (between 1990 and 2000), one of the lowest on the continent. The trend in decreasing per capita GDP could be associated with the conflict in this country. The war dramatically reduced national output and government revenue. Foreign businesses curtailed operations due to uncertainty about the outcome of the conflict, lack of infrastructure, and the difficult operating environment. The war also intensified the impact of such basic problems as an uncertain legal framework, corruption, inflation, and lack of openness in government economic policy and financial operations (CIA World Fact book, 2003).

Congo DR experienced five years of conflict in the period under study, 4 of which have been war and one a minor conflict. During this period, Congo DR received refugees of up to approximately 2% of its population in the early 90s, and half of that by the end of the decade. This country has the highest number of borders (9) in this study, 6 of which have been in various types of conflict. Relative to its population size, Congo DR has sent few refugees to other neighbouring countries, probably because of fewer years of conflict (1996-2000) in the selected time period. The conflict in Congo DR has also produced positive externality to neighbouring countries[32]. Rwanda and Uganda are said to have earned sizable benefits from the exploitation of natural resources in the DRC (Léonce and Emizet 2003).

Since independence in 1961, Sierra Leone has been governed under different constitutions which all provided for distinct political power structures including a republican system, one-party regime and multi-party system. The most recent constitution adopted in 1991 has barely been functional as it was suspended during the military regimes over the period 1992-1996 and again 1997-1998. The conflict in Sierra Leone began in March 1991 when armed

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[32] For the spill over effects of conflict, see chapter 7 of this study.

combatants crossed the border from Liberia into the South-Eastern part of the country (Muana, 1997). The attack has been variously attributed to a "spill over" of the Liberian civil war (Carver, 1997). The conflict situation, combined with military regimes in the decade posed serious economic problems as the international community turned a blind eye on military rule and imposed sanctions on an already crippled economy.

The pre-war state of the economy is a key determinant of the economic and social impact of a conflict. However, it is difficult to ascertain this state for some of these countries because at the outbreak of their conflict, availability of data was a more serious problem. In Sierra Leone, economic growth and GDP per capita decreased even before the outbreak of the conflict. The war started in 1991 when per capita GDP was still less than $1,000 PPP adjusted. Sierra Leone ranked between 173-175th most often the last in the UNDP human Development indicator Report[33] since 1990. Per capita GDP slowly declined from $894 in 1990 to about $634 in 1995, when the conflict was coded as an intermediate conflict, a shift from its previous state of classification as a minor conflict from 1991 to 1993. In 1998 and 1999 Sierra Leone was coded as being at war and the GDP per capita fell to $512 and $457 respectively. Although most of these figures are still higher than the country's prewar state of the 1970s, it is almost half that of the pre-war decade (the 80s) level of $708. The country grew on average between 1990 and 2000 at –7.76%, the second lowest in the sub-region for countries in this study. This sharp economic decline is generally attributed to the internal conflict since 1991 and economic mismanagement during the 1970s and 1980s.

During the decade under study, Sierra Leone received refugees mostly from neighbouring Liberia of up to about 1% of its population. Approximately 7 to 8% of the Sierra Leone population was in foreign countries, a large number of them fleeing to neighbouring Guinea since Liberia, the other option, was at war. Both situations create problems for economic development as the economy looses human capital in addition to the opportunity cost incurred by having its active labour force involved with the conflict. The country with only two borders had 50% of these in conflict, and, it is also alleged that the conflict in Sierra Leone spilled over to Guinea when rebel forces launched attacks on border towns in Guinea, mostly

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[33] This is a composite index measuring average achievement in three basic dimensions of human development: a long and healthy life, knowledge, and a decent standard of living.

in refugee hosted areas in the late 90s. These relationships confirm the results of the study on the direct and indirect effects of having a neighbouring country at war in chapter 7.

An assessment of the post-war situation for the countries selected in this section is not advisable since all three countries are newly emerging from war. A post war assessment is expected at least five years after conflict, where the economy is expected to be slowly recovering.

Table 5.8 Socio-economic situation of Countries in the country specific Analysis

Key Variables in this study	Angola			Congo D R			Sierra Leone		
	1970s	1980s	1990s	1970s	1980s	1990s	1970s	1980s	1990s
GDP per capita (PPP)	..	1,353	1,995	950	1,557	991	424	708	665
Illiteracy rate	..	..		73	60		..	..	
Life Expectancy	39			47			35		
Minor Conflict	-	-	4	-	-	1	-	-	3
Intermediate Conflict	-	-	1	-	-	-	-	-	5
War	-	-	9	-	-	4	-	-	2
Refugees[34] Received	-	11,017	10,920	-	836,800	366,300	-	32,767	9,900
Percentage of Population	-	0.11	0.09	-	2.02	0.77		0.80	0.21
Refugees Sent[35]	-	280660	343600	-	89700	200950	-	318940	407075
Percentage of Population		2.57	2.69		0.22	0.37		7.22	8.11
Population growth	-	3.75	2.46	-	3.70	2.49	-	2.56	1.78
Number of border		4			9			2	
Neighbours in Conflict		2			6			1	

A few common trends could be observed in all the cases discussed. Firstly, that all three conflicts had an economic as well as a political side. Fighting was fuelled by the countries' vast mineral wealth, with all sides (rebel factions as well as governments) taking advantage of the anarchy to plunder its natural resources. The rich resources in these countries cannot be blamed for the initiation of the conflicts. Rather, such resources provided easy ways to finance the conflict. All three conflicts have also been known to affect neighbouring countries directly, be it through their production of refugees or by dissuading potential investors away from the vicinity. This finding motivates the investigation on the determinants of refugee movement in the next chapter.

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[34] The refugee population shown is from 1990 to 1995 and 1996 to 2000.
[35] The origin of refugees includes UNHCR estimates of refugees by origin in industrialized countries

5.9 CONCLUSION

This chapter comprises the main results of this study. Using econometric methods on cross sectional data, the study finds very interesting results on the economic relationship between refugees and refugee-receiving developing countries and the effect of conflict in own countries. In a bivariate regression framework, conflict and refugees in host countries indirectly affect economic growth by their direct effect on several socio-economic variables: trade, life expectancy, gross capital formation, etc. The most important lesson from the results of this chapter, however, is that the effects of refugees in developing countries depend largely on the prevailing level of development of the host country. Conflict, in contrast, is bad for economic growth irrespective of the level of development, although conflict is also found to harm more developed countries most. The study also uses standard methods of panel data estimation (fixed effects and random effects), which makes it possible to control for time-invariant country-specific effects, further establishing short run effects of refugees and conflict in developing countries. Some country specific analysis back up the results of the regression**.**

The following chapter carries out empirical analysis on factors determining the movement of refugees.

5.10 APPENDIX TO CHAPTER FIVE

Figure 5.0 TEST FOR ABSOLUTE CONVERGENCE
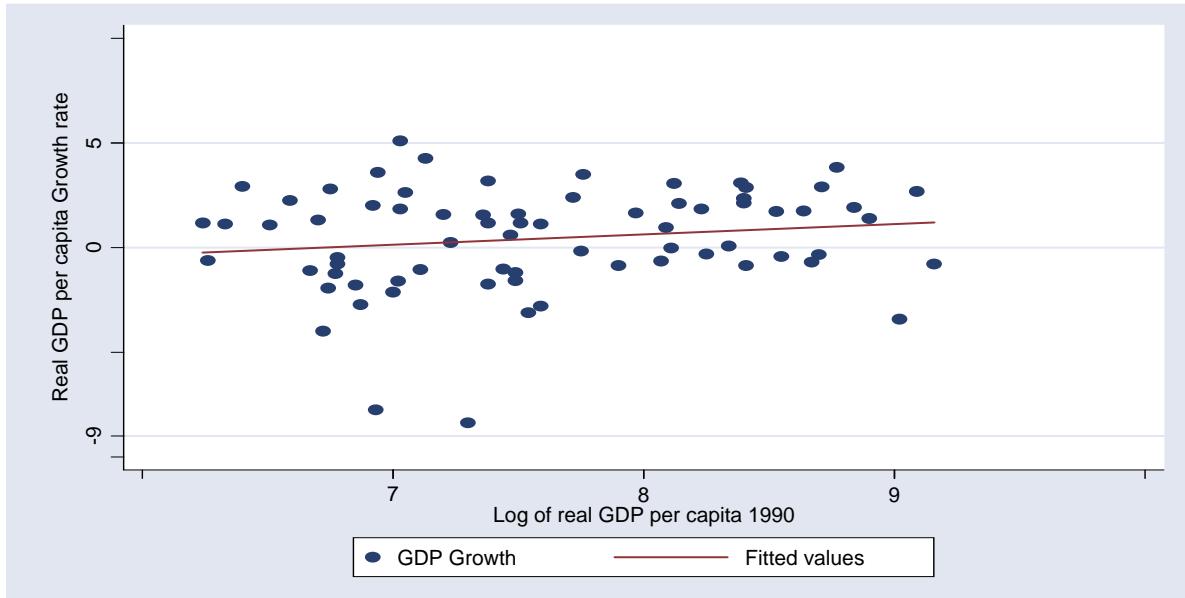
Figure 5.1 TEST FOR CONDITIONAL CONVERGENCE IN THE TEXT BOOK SOLOW MODEL
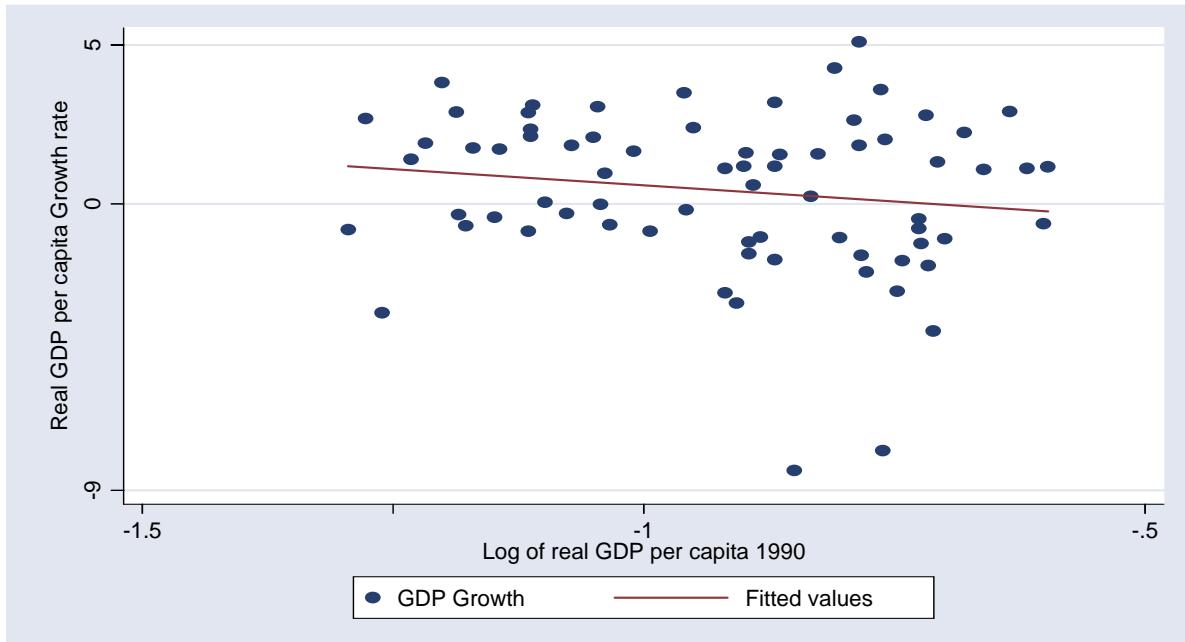
Figure 5.2 TEST FOR CONDITIONAL CONVERGENCE IN THE AUGMENTED SOLOW MODEL
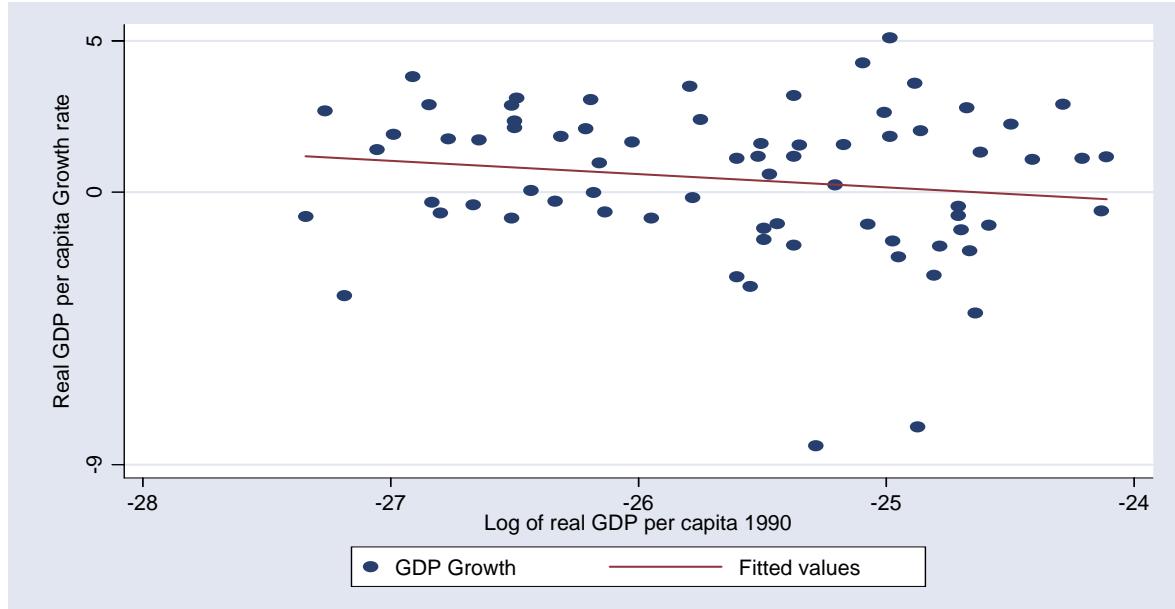
Figure 5.3 TEST FOR CONDITIONAL CONVERGENCE IN THE AUGMENTED SOLOW MODEL WITH KEY VARIABLES OF THE STUDY
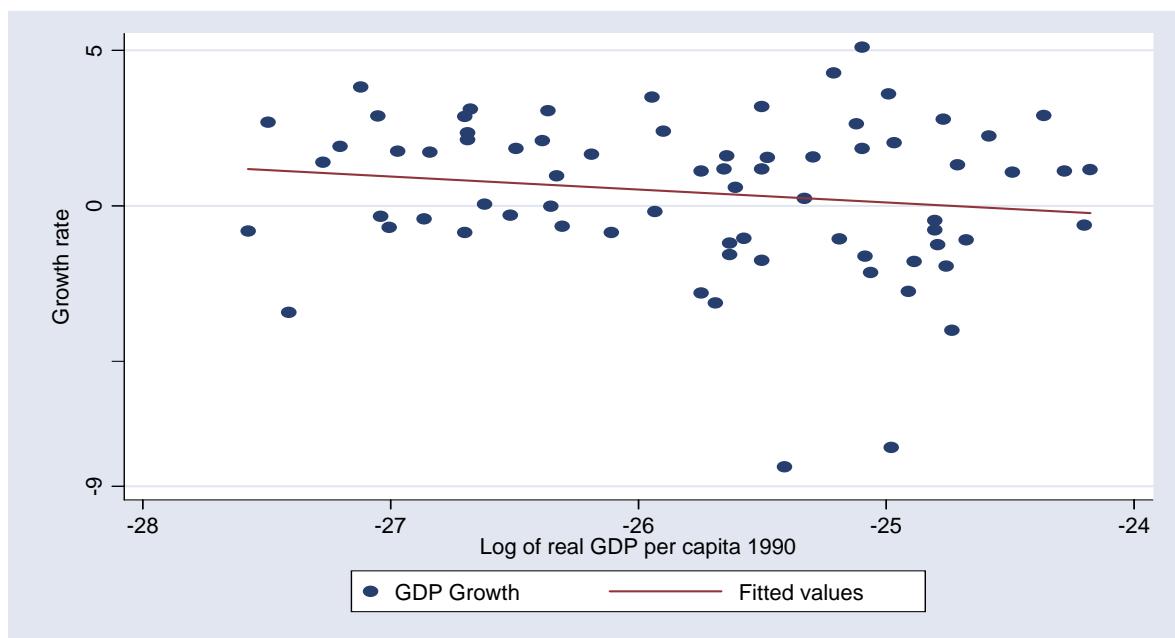
Table 5.1.2 Correlation Coefficient of Effect of Conflict on Determinants of Economic growth

	GDPgr	GDPav	Pop	Invesment	Life exp	School	Openess	Ymincon	Yintcon	Ywar	Sipricon
GDP growth	**1.00**										
Gdpave	0.26*	1.00									
	(0.02)										
Population	-0.40*	-0.55*	1.00								
	(0.00)	(0.00)									
Investment	0.61*	0.26*	-0.37*	1.00							
	(0.00)	(0.03)	(0.00)								
Life expectancy	0.41*	0.58*	-0.52*	0.30*	1.00						
	(0.00)	(0.00)	(0.00)	(0.01)							
School	0.26*	0.73*	-0.58*	0.35*	0.63*	1.00					
	(0.02)	(0.00)	(0.00)	(0.00)	(0.00)						
Openess	0.22	0.13	0.12	0.51*	0.02	0.19	1.00				
	(0.07)	(0.25)	(0.34)	(0.00)	(0.87)	(0.10)					
Ymincon	-0.05	-0.24*	0.10	-0.15	-0.06	-0.13	-0.19	1.00			
	(0.69)	(0.04)	(0.39)	(0.20)	(0.62)	(0.28)	(0.11)				
Yintcon	0.08	-0.09	-0.10	-0.08	0.12	0.02	-0.36*	0.26*	1.00		
	(0.52)	(0.44)	(0.40)	(0.49)	(0.31)	(0.85)	(0.00)	(0.03)			
Ywar	-0.08	0.05	-0.11	-0.03	0.08	0.21	-0.11	0.30*	0.34*	1.00	
	(0.48)	(0.67)	(0.36)	(0.83)	(0.52)	(0.08)	(0.38)	(0.01)	(0.00)		
Sipricon	-0.16	-0.11	-0.04	-0.06	0.04	0.03	-0.25*	0.47*	0.43*	0.51*	1.00
	(0.17)	(0.35)	(0.72)	(0.62)	(0.74)	(0.82)	(0.03)	(0.00)	(0.00)	(0.00)	

Figure 5.4 Correlation between conflict dummy and growth determinant variables

Avschool

100
80
60
40
20
0

0　　　　　　　　　　1
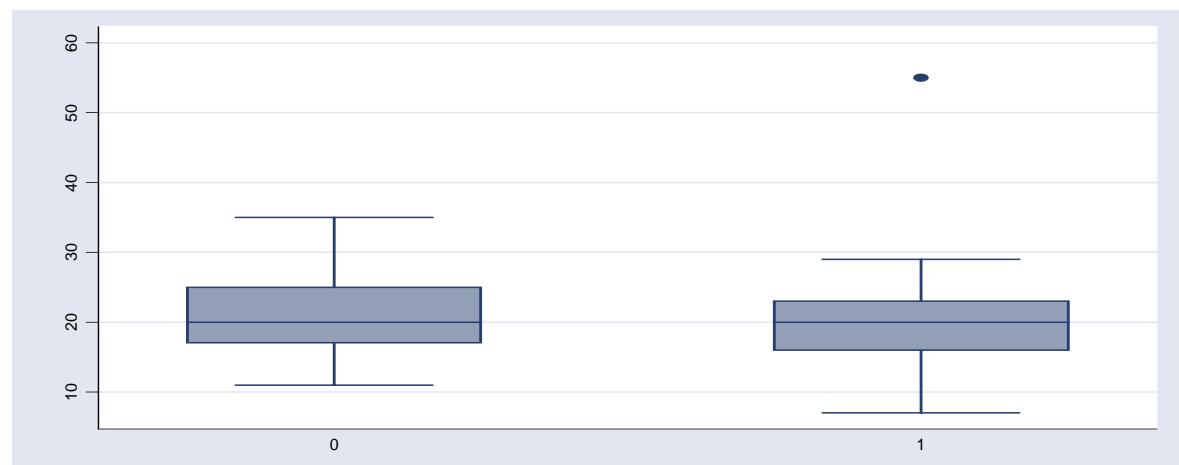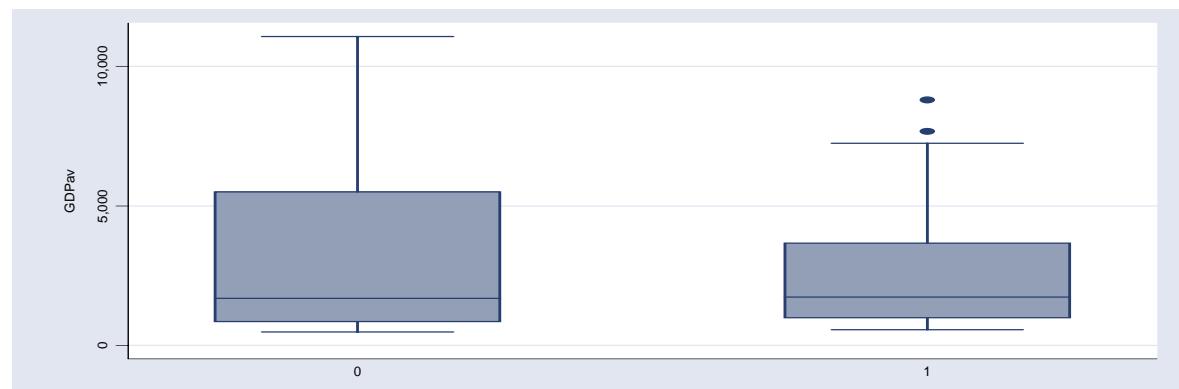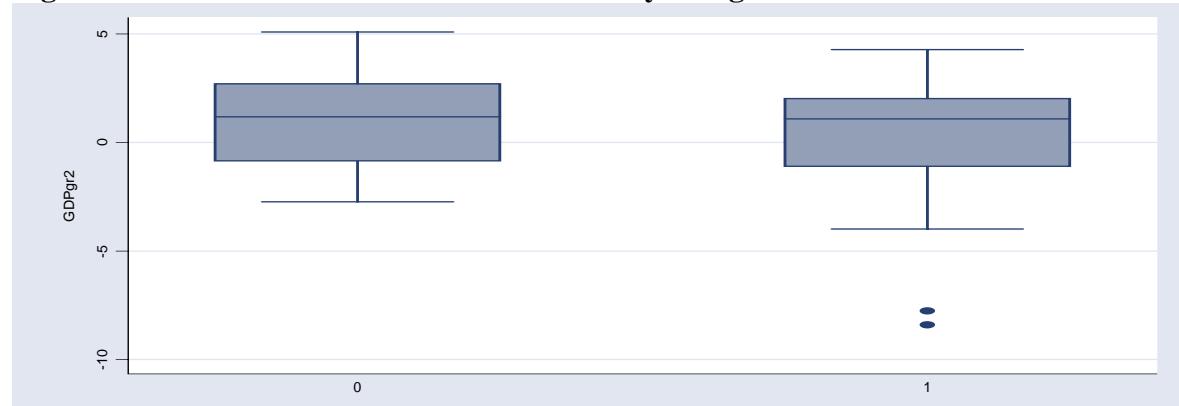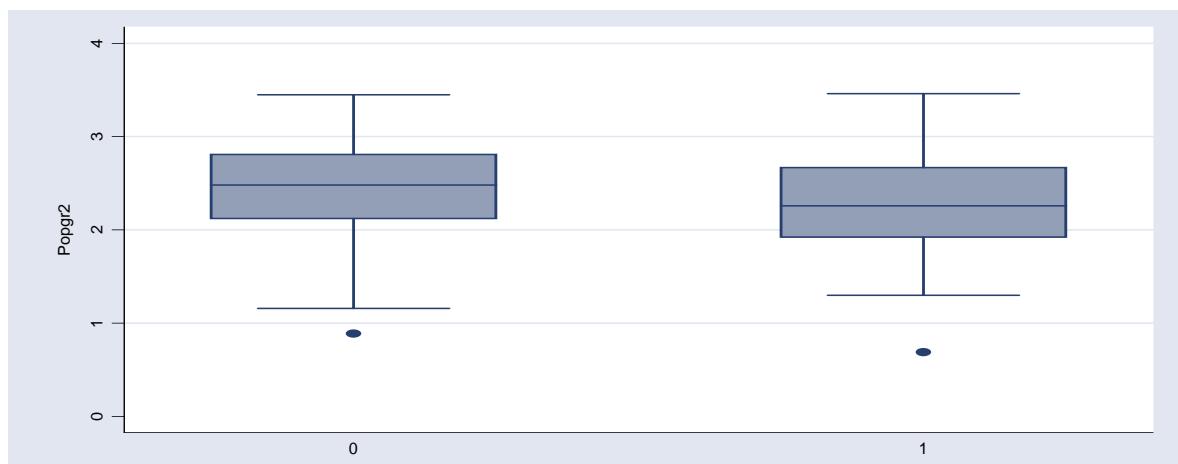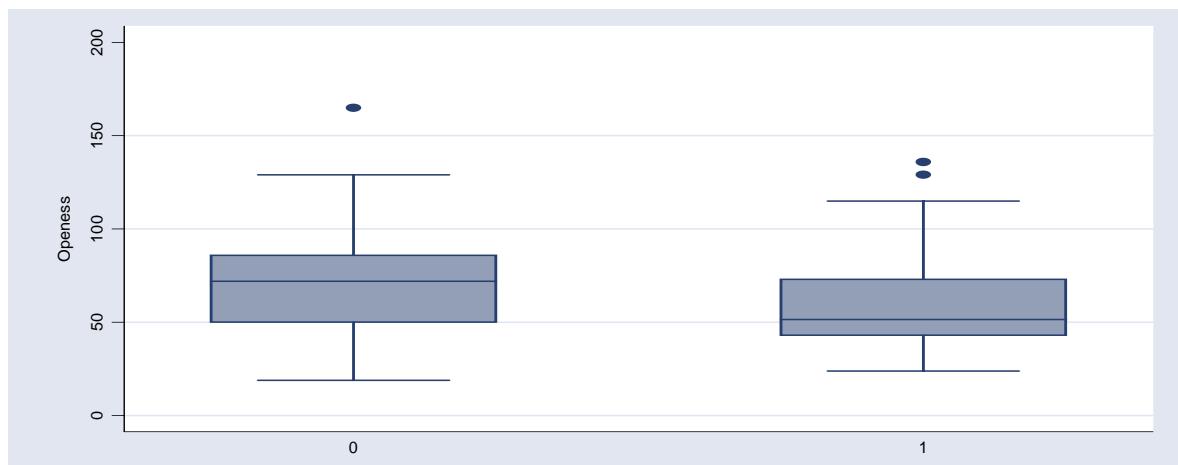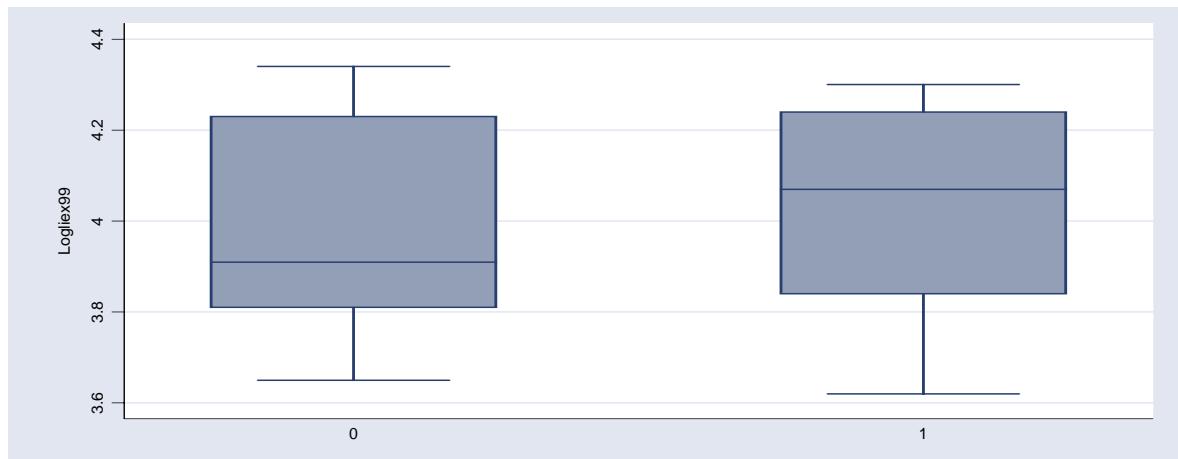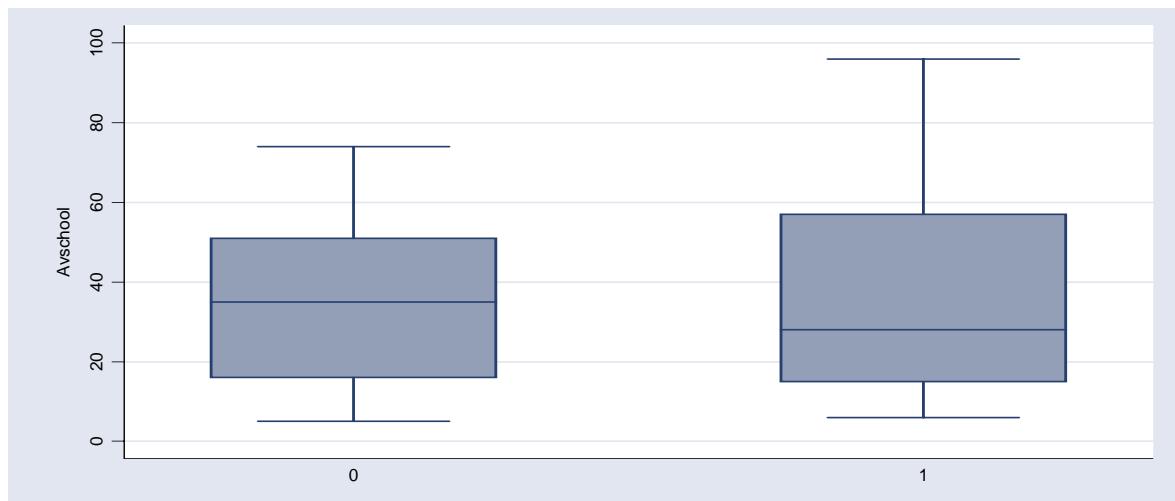
Table 5.2.2 Correlation Coefficient of Effect of Refugees on Economic Development Indicator

	GDPgr	GDPav	Pop	Invesment	Life exp	School	Openess	Refugee %	Total Refugee
GDP growth	1.00								
Gdpave	0.26*	1.00							
	(0.03)								
Population	-0.41*	-0.55*	1.00						
	(0.00)	(0.00)							
Investment	0.61*	0.26*	-0.37*	1.00					
	(0.00)	(0.03)	(0.00)						
Life expectancy	0.41*	0.58*	-0.52*	0.30*	1.00				
	(0.00)	(0.00)	(0.00)	(0.01)					
School	0.26*	0.73*	-0.58*	0.35*	0.63*	1.00			
	(0.03)	(0.00)	(0.00)	(0.00)	(0.00)				
Openess	0.22	0.14	0.12	0.51*	0.02	0.19	1.00		
	(0.07)	(0.25)	(0.33)	(0.00)	(0.87)	(0.10)			
Refugee %	-0.12	-0.15	0.13	-0.17	-0.27*	-0.23	-0.06	1.00	
	(0.31)	(0.22)	(0.27)	(0.16)	(0.02)	(0.06)	(0.61)		
Total Refugees	-0.01	-0.02	-0.05	-0.05	0.03	0.00	-0.22	0.55*	1.00
	(0.96)	(0.86)	(0.70)	(0.70)	(0.76)	(0.99)	(0.07)	(0.00)	

*Significance at the 5% level
Standard errors in parenthesis

CHAPTER SIX: DETERMINANTS OF REFUGEE MOVEMENTS[1]

In the majority of cases, people, no matter how pressured, may still be able to exercise some form of residual power to influence their decision as well as their destination. (Kibreab 1987)

The decision to migrate might well be undertaken under time and other pressure, but even in these cases a decision to leave the country is in effect taken.   *(Neumayer 2003a)*

6.1 INTRODUCTION

Interest in investigating the effect of refugees on economic growth has simultaneously ignited the curiosity to scrutinize factors that lead to the movement of refugees in this chapter. The theoretical background on refugees' effect in developing countries is briefly discussed as a way of backing the theoretical discussion on the determinants of refugee movements. The chapter present results on factors that possibly induce the movement of refugees and those factors that also determine which countries they actually go to. Thus, two aspects of the determinants of refugee movements are treated in this chapter: 'push' and 'pull' factors of refugee movements. All of this is important for the study because the final recommendation based on the entire study should take determinants of refugee movement into serious consideration.

It is important to understand the driving forces behind recent international migration patterns; a limited amount of empirical research has been devoted to this topic, perhaps due to past unavailability of cross-country data (Mayda, 2003). There are only two quantitative studies[2] examining directly the choice of destination country within a region (Neumayer, 2003). Previous studies have examined the effect of colonial, cultural and language ties, geographical proximity and trade relations on migrants' choice of destination country. Their choice of explanatory variables have been largely influenced by the fact that they investigate determinants of South to North migration, unlike this study, which focuses on a specific kind of migration within developing countries, thereby becoming an addition to the little existing evidence on such issue. Research on international migration has been largely limited to South-North migration and not on factors that determine cross border migration within the developing world. This call remains an underlying motivation for this chapter.

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[1] I am using the word 'movement' instead of 'flow' because the chapter deals with investigating determinants of refugee flows as well as the stock of refugees.
[2] Böcker (1998) and Thielemann (2003) as cited in Neumayer (2003).

Several questions are asked and answered in this chapter, especially questions like, do Africans move across borders mainly in response to political upheaval and civil war, or are there economic, demographic and other forces at work? Do Africans prefer some destination countries over others? If so, why? This chapter attempts to empirically answer these questions in addition to estimating the impact of wars and political unrest on refugee flight. This is done in order to find the root cause of refugee movements. The next section provides a theoretical discussion of factors that determine the movement of refugees and those that influence the decisions on destination choice.

6.2 THEORETICAL CONSIDERATIONS ON THE DETERMINANTS OF REFUGEE MOVEMENT

Refugees flowing into countries might exert enormous pressure not only on the economy of receiving countries but also on the social cohesion of its citizens. The security situation is likely to deteriorate as the number of people in a region drastically increases. With the unconventional method of warfare in most developing countries, it is normally especially problematic to distinguish between rebels and refugees creating pandemonium and suspicion among residents. Moreover, large scale refugee movements put people into crowded conditions in the asylum countries without access to clean water and food, thereby producing a perfect environment for infectious diseases (World Bank 2003). Naming but a few of the possible effects of refugees on host countries, this section seeks to discuss the underling factors that, in fact, induce refugee movement[3]. This includes a discussion on factors that influence the initial decision to flee and the subsequent decision about destination country.

A prominent argument put forward on push factors of refugee movement has been the prevalence of conflict. There is a substantial theoretical debate on the relationship between conflict and refugee movements. There is also enough evidence[4] to prove the direct relationship between conflict and refugee movements. The cold war, for example, was also said to have exacerbated refugee problems. Interventions into refugee-generating conflicts generally had devastating consequences, increasing the loss of life, prolonging the conflict and reducing the scope for action by local and regional actors (Stein, 1996).

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[3] This section does not discuss the factors that determine migration in general. Factors discussed here, even though they may be similar to those that stimulate migration in general, are specifically discussed in relation to refugees.

[4] See table 1.5 in chapter one for example.

Factors that see people leaving their homelands can be classified into two main categories: push and pull factors. All refugee problems are, at a minimum, bilateral affairs involving a homeland and a refuge; push factors in the home land, in addition to pull factors in the destination country, determine, to some extent, where we see more refugees coming from and where we see them headed. This section distinguishes between factors pushing people out of their country of origin and factors pulling people towards the country of destination.

Some writers think that the deep causes of this problem are mainly to be sought at the political level. The principal factors which provoke large movements of populations throughout the world are well known: the violation of human rights; political and military conflicts within a country; tribal and religious repression; frontier disputes and armed conflicts between neighbouring states; rivalry between the superpowers and regional powers; natural catastrophes; and economic crises, to name a few. Apparently the wave of refugees in Africa was closely linked with the claim of most African countries to self-determination, and it could be thought that after independence it would have stopped, or at least slowed down. Unfortunately, this did not prove to be the case, and the number of refugees, which was about 200,000 in 1950, was multiplied fivefold during the 1960s, which are generally considered to be the years of African independence. Today there are between 5 million and 6 million people considered as refugees in Africa (CIMADE, INODEP and MINK 1986). During the 1960s and 1970s, anticolonial independence movements spawned large scale refugee movements. Violent liberation struggles in the Lusophone African countries of Angola, Guinea-Bissau and Mozambique forced a large number of people to flee. In North Africa, the Sahara conflict is a major cause of the refugee problem.

The analysis of determinants of asylum migration to the West has been systematically excluded in this study. Individuals in developing countries decide on going to the West normally for clear cut reasons. Results of recent studies[5] confirm that economic hardship as measured by income, growth and economic discrimination against ethnic minorities, lead to higher flows of asylum seekers. Income and equity improvements in source countries can, therefore, reduce migration pressure. However, political oppression, human rights abuse, violent conflict and state failure are also important determinants, casting doubt on the misconception of all asylum seekers as 'bogus' (economic) refugees. (Neumayer 2003).

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[5] See Neumayer (2003) and Mayda (2003).

It is important to note that the absence of conflict does not guarantee security and property safety in some countries. Individual and group persecutions have been known to occur in countries where in there is no conflict. A popular example is the Kurds in Turkey and Iraq. Moreover, protests in the form of riots, demonstrations, strikes, assassinations and many more are also incidences that might produce similar effects like conflict on the movement of refugees. These may not be on as large a scale as that of conflict, but they could also be substantial especially if the occurrences of the mentioned incidences are frequent or expected to be frequent in the future.

In addition to conflict induced displacement, development programs within a country can also displace people. This includes, but is not limited, for example, to the demolition of houses to construct roads. Though this displacement is mostly internal, it might lead to an international movement if people loose confidence in their government as a result of such actions. Populations that are displaced —that is, forced or obliged to move— by development projects equally pose challenges to economic development. In most cases such populations may not have crossed a border, and are, hence, not considered to be in refugee-like circumstances within their own country. Nevertheless, they have been evicted from their homes or places of habitual residence, had their lives and livelihoods disrupted, and face the uncertainties of resettling in unfamiliar and often inhospitable locations. Cernea (1999), a sociologist who has researched development-induced displacement and resettlement for two decades, writes that development induced displacement is like becoming a refugee, whereby people forcibly ousted from their land and habitat by a dam, reservoir or highway, it is not only immediately disruptive and painful, it is also fraught with serious long-term risks of becoming poorer than before displacement, more economically vulnerable, and socially disintegrated.

Natural disasters have also been known to displace people on a large scale. Droughts, famine, earthquakes, flood, volcanic eruptions, landslides, and forest fires have all taken a significant human and economic toll on developing countries and their peoples. Although to a far less extent than armed conflict, natural disasters affect civilian population in many developing countries. Cases of earthquakes, landslides, and floods leave their survivors facing many challenges, among which the loss of their homes, possessions, and communities are common. These are normally translated into movement to other parts of the country (people being termed internally displaced) or across borders producing refugees.

Another well-known factor that increases the flow is low transportation costs. Where refugees need to move across an immediate border which may be a few kilometres away, transportation cost is less likely to be a determining factor in refugee movements. In some cases agencies entrusted with the welfare of refugees provide transportation. However, the availability of low transportation costs could generally speed up the decision to leave. Costs of moving should also not only be seen as financial costs since non-pecuniary costs could arise to influence the decisions behind refugee movement.

Family ties and friends who are already in exile could also induce the movement of refugees. The attraction of refugees already residing in the asylum country goes with information about the destination country and accessibility of both. In addition to family reunification programmes in refugee situations, friends could influence the decisions of those left behind to move. Friends and relatives effect has received a broad consensus as a determining factor in migration in general among scholars in this discipline.

Reception in destination country is also a key consideration for the push and pull factors of migration; refugees will prefer welcoming countries. However, the receptive attitude of the host country's population is a decreasing function of the number of the refugees, and also of the rate of the flow. The arrival of thousands of refugees is likely to reduce the sympathetic feeling of the host towards the refugee and introduce insecurity which leads to the negative treatment of refugees. In the event of a steady flow leading to an increased total number of refugees, hospitality towards refugees may go into decline as the hosts' capacity to accommodate strangers becomes satiated.

The determinants of refugee movements suggested above are by no means exhaustive. Every refugee has a unique experience of fear and flight; there are numerous underlying reasons for persecution. The most important of these is linked to the inseparability of human rights and refugee experiences all over the world. People become refugees because of fear of human rights violations, of random violence, and of persecution. Out of desperation, they choose the only option left to them: to leave their homes in search of safety.

Although the argument that African countries have cultural, economical and political similarities cannot be completely disputed, it can also be a misleading generalization because

there exist an abundance of diversity on the continent economically and politically. While others strive economically, others have seen declines in per capita GDP. Further, some African countries are known to be peaceful although this peaceful nature could be regarded as fluid as recent incidents in the Ivory Coast show: situations can change very quickly. This brings the discussion to the next stage which looks at factors that influence destination choice in the midst of the diversity in Africa.

After the decision to leave is made, ensuing determination pertains to the choice of destination country. These are what I refer to as pull factors[6]. What factors can be expected to influence a refugee's choice of destination country within a region of various potential destination countries? Such a decision is influenced by a multitude of complex and mutually non-exclusive factors (Neumayer, 2003). A quick answer relates to either the security situation in the destination country or that country's economic situation. If one subscribes to the latter option, then one needs to make a clear distinction between economic migrants and refugees. The two categories differ much in their treatment under the law, in as much as they move from one point to the other. Strictly speaking, migrants considered in this study do not make, or are not expected to make, conscious decisions based on economic grounds on their choice of destination country. Refugees' primary motive of flight is 'fear of persecution[7]'. Consequently, an underling factor expected to influence a refugee's decision on the choice of destination country will be the political situation of the destination country. No one wants to run from persecution only to experience yet another form of persecution. Safety is a priority for refugees. Therefore, politically stable countries are expected to attract more refugees. The evidence of refugees fleeing into equally conflict affected countries stems possibly from the tendency of some conflicts to cluster in particular regions within a country (Gleditsch and Ward 2000). This study shows that interstate wars are clustered in certain regions. Refugees migrating to other conflict affected countries are then settling in safer regions of the asylum country.

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[6] It could be difficult to distinguish between those pull factors which influence destination country choice and those pull factors which, in fact, influence the decision to leave. This is to say that some pull factors not only influence the destination choice decision but also the initial decision to leave. A typical example is economic factors. A country's economic prosperity might attract refugees towards it but it might also affect the initial decision to leave.

[7] See UNHCR Geneva Convention 1951, on 'who is a refugee'?

It is also to be expected that the number of borders a country has could determine the number of refugees entering that country. This factor could well be conditional on the stability situation of the destination country as well as being dependent on the countries a country shares borders with. By virtue of their geographical location, countries surrounding refugee-producing countries are obvious destinations for refuges. Zaire is bordered by nine countries and Sudan by eight, including Uganda, Angola, Chad, Ethiopia, Rwanda and Burundi which have generated thousands of refugees (Adepoju, 1989).

Further, migration networks and geographical proximity are important facilitators of refugee flows as predicted by theory. This is especially applicable to second generation migrants. Geographical proximity will also lower the costs of migration. Geographically close countries can be reached with cars, buses, boats or on foot, whereas flying is often necessary to reach distant countries. Geographical proximity often translates into greater cultural proximity as well (Neumayer 2003). Both of these are very good explanations for the increasing movement of refugees within developing countries.

Even though personal and corporate greed seems to be at the root of the refugee crisis, it is important to note that any large scale exodus is rarely caused or triggered by a single factor; rather, it is due to an accumulation of diverse, interlinked factors that increase the risk to life. By far the largest cause today remains war (as seen in the Rwandan or Bosnian cases). In addition, thousands continue to flee seemingly more peaceful countries in genuine fear for their own personal safety, either individually or together with other members of a persecuted group. Nonetheless, the final decision to leave ones country can be critically dependent on costs. Costs analyses are fundamental in influencing both the decision to leave and the choice of destination. People are only expected to leave their homelands when the costs of staying are greater than the costs of migrating. We may think of the costs of staying mostly as threat to life and property. Adjustments costs, in the form of language and cultural differences in the destination country, and direct costs, in the form of transportation and information, are seen on the other side of the scale. Migration is constrained by the availability of the financial resources to invest in the move (Hatton and Williamson, 2001).

These and many more theoretical debates on the determinants of refugee movements can be found in previous studies. This study adds to the little systematic empirical evidence that

exists in answering the specific questions of determinants of refugee migration in developing countries. The next section describes the data used in the empirical analysis to confirm these theoretical debates.

6.3 THE DATA

This study involves several analyses that could not be conducted with the use of a single dataset -- that described in chapter 4. This calls for the use of sub-datasets from time to time depending on the issue under investigation. Considering that two sets of questions geared towards finding the determinants of refugee movement are empirically answered in this section, there are two data sub-sets. The first, on the determinant of refugee movements, uses most of the variables described in chapter 4. In addition to this, table 6.1 has been created with brief description of variables as they are used in this chapter.

It is important, first of all, to distinguish between the two sub sets of data analyses in this chapter. One set of data is collected to analyse the 'push' factors and another the 'pull' factors since both questions are two sides of the same coin. This study tries to treat these two issues separately, and the choice of observation in each case is largely determined by the availability of data. Consequently, both questions cannot be answered with the same set of data. For push factors, analyses are based on refugee 'source countries' and on 'destination' countries for pull factors.

The UNHCR statistical Yearbook 2001 provides information on the number of refugees that leave a country in a year. However, this data only starts in 1992 while other data sources for push factors end in 1995. The dataset with statistics on information to answer the question, on the 'push' factor 'determinants of refugee movements' has been limited to the use of only African countries for analytical advantages and for data availability. It is believed that factors that induce refugee migration in Asia may differ significantly from those at play in Africa. Confining the analysis to a single region will solve the problem of a single cross section wherein large amounts of data are averaged over the entire period without regard to country specific, and/or even regional differences. The source of data that contains a variety of variables (coups, crises, riots demonstrations etc) believed to have serious implications on the

movement of refugees has data for only 46 sub-Saharan Africa countries[8], 39 of which are included in this study[9]. All other variables on the determinants of refugee movements are only collected for African countries. The sample is for annual data from 1990 to 1995 for the 39 sub-Saharan Africa countries because this dataset has data for only until 1995.

The 'UNHCR 2000 statistical overview' provides information on countries of origin and on destinations of refugee populations from 1991 to 2000. Using this information, countries of origin in my dataset have been selected; the choices of destination countries for these analyses are restricted to developing countries. Western countries or developed countries are excluded[10] even where refugees from 'countries in this study' chose such destinations. A few countries of origin[11] which are not in my dataset have also been selected because such countries send refugees to countries of interest for this study. In addition, countries of origin with only one[12] destination country have not been included in the analysis of 'pull factors' since there are no possibilities for comparison. Destination countries[13] for which data is not available are dropped from the analysis for obvious reasons. Note also that all island countries are not part of this analysis for two reasons: one has to do with the fact that they either receive no refugees, or negligible numbers; secondly, they have no bordering countries with which their GDP per capita can be compared. These criteria led to the selection of refugees from 22 source countries going to 44 destination countries. Variables that might be responsible for the attraction or repulsion of the destination countries have been identified, data collected and described under sub-section 6.1.

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[8] These variables are described briefly on table 6.1. They have been coded in this analysis as they are in their original data form except for 'source' which is referred to in this study as 'refsource'.

[9] There are 40 countries from sub-Sahara Africa in this study. South Africa in my dataset is omitted in Robert Bate's data set on coups, riots, crises etc.

[10] There are obvious reasons for this. They do not fall within my study target, and only have few, and highly selected refugee migrating to these countries.

[11] Afghanistan, which is not part of my dataset but has sent refugees to India, Iran and Pakistan, is included because of the destination countries.

[12] Please note that having one destination country does not mean that there is only a single option in the original data but rather that the other options do not fall within my study area. Bangladeshis did only go to India, for example, but to Bhutan and Nepal as well. So these have been deleted because they do not have options and will have missing variables on other specification.

[13] For example, in the case of -Sierra Leone, refugees to Liberia have been deleted because of the latter's lack of data.

6.4 SUMMARY OF DATA

In this sub-section, I want to briefly describe the data in relation to the aim of this chapter which examines factors in countries of origin that push people towards migration to destination countries, and the attractiveness of destination countries. The first scenario involves an analysis of 39 sub-Saharan Africa countries and the latter includes 44 countries in the developing regions, Africa, Asia and Latin America. The data for each of these sets is now described below.

6.4.2 Descriptive statistics for 'push' factors[14]

There are 39 countries in this data set. Data on the total number of refugees for these countries is provided from 1992 to 1995, from which refugee per population (1992-1995) and refugee flow is calculated from 1993 to 1995. There are 156 observations for the first two variables (39 countries for 4 years) and 117 (39 countries for 3 years) for the second. The average number of refugees between 1992 and 1995 is 99,349 with a maximum of 2,257,600[15]. In 1994, Rwanda registered the highest number of refugees, 1,807,100, leaving a country in a year. There is an average increase of 2,121 refugees in each year. Refugees normalized by the source country population show that (share of refugees) there are 0.013 refugees per population, on average. The difference of per capita GDP between source country and the average of all destination country/ies (for each source country) shows that on average, destination countries have a higher GDP per capita than source countries. This could be due to the fact that some source countries have several destination countries whose average per capita GDP is likely to be high[16]. However, some source countries have a higher GDP per capita than the average of its destination countries[17] as shown by the maximum value for the difference variable of 589. This variation is good for the factors intended to be investigated by the data since the aim is to ascertain where differences in economic situation (GDP per capita) push refugees from their home countries. The data shows an average yearly GDP per capita

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[14] See table 6.3.1 in the appendix to this chapter.

[15] These are refugees leaving Rwanda in 1994, mostly as a result of the onset of genocide in that country.

[16] The exception here is Congo DR which sent refugees to 8 countries (Angola, Burundi, CA Rep, Congo, Rwanda, Tanzania, Uganda, and Zambia) but had a positive value for its difference in GDP per capita. This country had a higher income than the average of the 8 countries it sent refugees to. This is also the case with Mauritania and its two destination countries Mali and Senegal, Senegal to Gambia and Guinea-Bissau and Togo to Benin and Ghana.

[17] Other countries with a higher per capita GDP than the destination countries they sent refugees to are those with only one destination country: Ghana to Togo and Kenya to Ethiopia

of $1768, which is relatively high considering that 17 countries[18] out of the 39 have less than $1000 in each of the years between 1990 and 1995.

The majority of countries in the data set are not politically free. The average score of 5 on a 1 to 7 scale, where 1 is more free and 7 less, shows that the countries in this study are charactised by low degrees of political freedom. The civil rights index shows the same. In fact, for this latter index, there are no countries with the highest (1) degree of civil liberty. Most of the countries have, on average, large spaces (land and surface area in square kilometres) and also have about 4 borders. Descriptive information on all other variables is shown in table 6.1.

6.4.3a Descriptive statistics for 'pull' factors[19]

On the choice of destination country, data is provided for 44 destination countries from 1991 to 2000. The dependent variable in this case is the share of refugees in a destination country relative to refugees in other destination countries for each source country. Neither the absolute number of refugees nor the share in relation to a destination country's population could answer the question of why this particular destination country is selected. However, this information could be obtained by probing the relative numbers. This is why this section only uses the relative number[20] of refugees in a destination country. A description of the total number of refugees and the refugees normalized by destination countries is presented to give an indication of the number of refugees in each destination country.

The relative share of refugees in this study indicates that there are about 0.3 refugees which go to each destination country in relation to other destination countries. The data shows that there are about 104,400 refugees in the destination countries between 1991 and 2000 and these form a 0.005 share of the population. The total population size of countries is about 37.3 million, probably pooled by India with a 1016 million population, which shows up as the maximum in this data. The difference variables show that destination countries per each source country have a lower per capita GDP relative to the GDP per capita of other destination countries.

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[18] Benin, Burkina Faso, Burundi, Chad, Congo, Ethiopia, Guinea Bissau, Madagascar, Malawi, Mali, Mozambique, Niger, Nigeria, Senegal, Tanzania, Uganda (1990-1994) and Zambia.

[19] See table 6.3.2 in the appendix

[20] This, unlike the relative number of refugees in the 'push' factor analysis, is not the number of refugees in relation to a country's population, but in relation to refugees from the same source countries to other destination countries.

This might imply that refugees went to several countries leading to a high average for all destination countries. However, the economic situation of each destination country is also controlled for, which shows that countries have $1788 on average per year from 1990 to 2000. The political rights and civil liberty indices also show countries have lower degrees of freedom. On average, the countries have about 5 borders and share a border length of about 849 kilometres with source countries. The length of border variable shows a 0 minimum, which means that there are refugees from source to destination countries even though the two do not share a border. This brings me to the discussion of certain peculiarities of the data on destination choice for the study that is relevant for the analyses in this chapter.

6.4.3b Choice of destination countries: some background information

Three pertinent trends emerge from simple observation of the data. First, refugees' choice of destination county does not appear to be based on the economic situation of destination countries. If this is empirically true, it makes them distinctively different from economic migrants, a conclusion best reached after looking at results of the estimation. Refugees are often seen moving into other poorer countries[21]. African across-border migration generally involves moving from one poor country to another. Big gains by moving from low-wage to a high-wage country are not typical in across-border migrations within Africa.

Secondly, it is observed that refugees move to other conflict hosting countries[22] because these countries might have more peaceful areas.

Another common trend is the two-way movement of refugees[23] between source and destination countries. This means that some countries are both source and destination countries at the same time. It is hard to comprehend this trend, but African borders have been arbitrarily demarcated in such a way that the same ethnic group is often found in several

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[21] For example, Angolans went mostly to Congo, Congo DR, Namibia and Zambia but a large majority of them were in Congo DR which has the lowest per capita GDP among the 4 countries. This also applies to Burundians in Congo DR., Rwanda and Tanzania, where in the majority went to Tanzania which has the lowest GDP per capita among the 3 countries. This observation is consistent for most of the countries but different for Guatemalans, who mostly went to Mexico with the highest GDP per capita among the destination countries of Guatemalans.

[22] Most of the destination countries (27 out of the 44 destination countries) are in one form of conflict or another during the study period. Examples include Congo DR which has experienced conflict for 5 out of the 10 years under study. Yet it received refugees from several countries: Angola, Burundi, Congo, Rwanda and Sudan.

[23] Liberia to Sierra Leone, Burundi to Rwanda, Congo DR. and Congo Republic, Sudan and Ethiopia, and vice versa.

countries[24]. It may well be that these refugees are moving into these countries because of close ties. This could also be linked to the other observation that refugees went to countries with whom their native countries do not share a border[25]. This situation is analogous to what Mayda (2003) and Neumayer (2003) discovered: countries (in developed region) receive higher shares of asylum seekers from countries of origin that are former colonies, that speak the same language, and that are geographically closer. They also found significant evidence for network effects as a higher share of asylum seekers from a country of origin already resident in a destination country attracts a higher share of new asylum seekers from the same country. Similar forces could be at play in the African cross border migration. The next section describes the variables of the study in detail.

6.5 VARIABLES

The variables selected in this section are specific for the analysis that should be carried out. They are discussed below while trying to give reasons for their selection. Most variables are used for both 'push' and 'pull' factor analysis but the calculations might be different in each case[26]. As a result, reasons for the selection of variables are given for both the push and pull analyses.

MOVEMENT OF REFUGEES

This refers to a variable generated by own calculation as the dependent variable drawing information from UNHCR statistics on the movement of refugees from country of origin to destination countries. There are three main dependent variables answering the question on the determinants of refugee movement, in other words, push factors. One is the flow of refugees, the absolute number of refugees moving out of a country in year (stock) and the absolute number of refugees normalized by source country population as calculated in equation 2. All these three variables are about the refugees each source country 'sends'; this means that they all analyse the same things. An additional dependent variable in a similar respect -- refsource – is included. Data on this variable is from the World Refugee Survey, and it is already normalized by source country population size. The purpose of including this variable is to check for the robustness of results across different specifications and different data sources.

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[24] An example is Mandingos in Guinea, Sierra Leone, Liberia and Gambia; also Hutus and Tutsis in Congo DR, Rwanda and Burundi.

[25] Vietnamese to the Philippines; These might have travelled by boats. Rwandans also went to Kenya.

[26] The 'difference' variable is used in both cases but it is calculated differently in each case.

Two dependent variables are also calculated to estimate specifications on the pull side of refugee migration. The absolute number of refugees flowing into destination countries is converted to relative terms by taking the total of refugees to all destination countries for each source country, and for each year, and dividing each destination country's annual figure by the annual total (all destination countries per source country) for the country of origin. This could be illustrated as:

$$Share_{it} \text{ (relative to other destination country)} = \frac{refugees_{ij}}{refugees_{2...nj}} \text{.....................(1)}$$

Where 'i' stands for one receiving country, 2....n all other selected receiving countries, and 'j' the source country. This represents the share of refugees to destination countries relative to other receiving countries. With this variable, some destination countries receive refugees from only one source country while others get them from several other countries; these then enter the data set several times. The dependent variable is then calculated each time a country receives refugees from a source country, since the combination of destination countries[27] is different from every source country. Refugees to Congo DR, for example, come from Angola, Burundi, Congo, Rwanda, Sudan and Uganda. This means that Congo DR appears six times. The same thing applies to Tanzania, Uganda, Kenya, Ethiopia and several others. This increased the number of observation to 75 instead of 44.

A second dependent variable in the pull side analysis is also calculated as follows:

$$refshare_{it} \text{ (as a share of destination country population)} = \frac{refugees_{it}}{totalpopulation_{it}} \text{...(2)}$$

Where 'i' stands for host country and t time, this equation calculates the share of refugee each country receives normalized by its population size. Instead of normalizing the dependent variable by population size one could have also included population size of the destination country as a control variable. This is done for dependent variable in equation (1) to further capture the population size effect of the destination country. The last two dependent variables explained above are used to estimate the factors influencing destination country choice, in other words, pull factors.

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[27] For example, refugees from Angola went to Congo DR., Congo, Namibia and Zambia, and those from Burundi went to Congo DR., Rwanda and Tanzania. The combination of destination countries for Congo DR in the Angolan destination countries is different in the Burundi case.

CONFLICT

Conflict enters this analysis as a dummy variable which is 1 if a country has a conflict[28] and zero otherwise. When used to determine push factors mitigating against the movement of refugees, it is expected to enter the regression with a positive sign as conflict is presumed to be a fundamental factor inducing the movement of refugees. Additional variables depicting general insecurity (see table 6.1) are also used to further substantiate the fact that conflict and general political instability may produce similar effects on the movement of refugees.

The conflict variable is also tested to ascertain whether the mere presence of conflict (indicated here by the dummies) in destination countries is enough to frighten refugees away. This is important because, on simple observation of the data, refugees are seen flowing into conflict affected destination countries. This suggests that conflict might not be a key factor in making decisions on where to go, an action which is contrary to common sense. It might, however, reflect the fact that some part of countries in conflict are relatively safe and so refugees could go to those parts of the neighbouring country that are safer than their countries of origin. Security or safety is expected to be of paramount importance in the prior decision-making process to flee, especially if we subscribe to the premise that refugees flee primarily because of lack of security and protection in the home country. This variable is expected to be negatively correlated with the movement of refugees into destination countries; countries in conflict are expected to attract fewer refugees than peaceful countries.

FREEDOM STATUS

This variable examines two forms of freedom indicators; the civil liberty score[29] and the political rights[30] index of the Freedom House[31] data base. The average of these two scores is

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[28] There are three types of conflict here; viz, minor, intermediate conflict and war --see chapter one for explanation. Dummy variables are used instead of the continuous variable on conflict since the estimation is a pooled cross section.

[29] The civil liberties index focuses on the freedoms for citizens to develop views, institutions, and personal autonomy apart from the state. It is a subjective index, ultimately based on the judgments of the Freedom House survey team, with the ratings subject to several layers of review.

[30] According to Freedom House, political rights "enable people to participate freely in the political process, which is the system by which the polity chooses authoritative policy makers and attempts to make binding decisions affecting the national, regional, or local community." These rights allow all adults to vote and run for election and for elected officials to have decisive votes on public policies.

[31] The Freedom House civil liberties and political rights indices evaluate the rights and freedoms enjoyed by individuals in countries and territories around the world. Freedom House does not rate governments per se, but rather the extent to which citizens enjoy basic rights.

then used to determine the freedom status[32] of the countries. The freedom status of a country is expected to be positively correlated with push factor analysis and negatively correlated on the pull side analysis in determining the movement of refugees out of/into a country. This means that the lower/higher these indices the higher/lower the number of refugees sent/received, because the indices are on a 1 to 7 scale and a low index indicates more freedom and a high figure, less freedom. Less freedom in a country is expected to push refugees whereas more freedom is expected to let them stay in their country; the reverse is true in the destination country as no refugee is expected to 'run from the frying pot to the fire' considering that lack of security or protection is the primary reason for flight.

NUMBER OF BORDERS

This variable takes on 2 forms: first, it looks at the number of borders each source/destination country has, and second, at the length of border distance (in kilometres) between the source country and the destination country. The first one, 'nobord', will tell us whether the more borders a source country has the more refugees it sends, and also whether a destination country attracts refugees because of its number of borders. This variable is expected to be positively related with the movement of refugees on both the source and destination country argument. The second variable, which is 'border length' will demonstrate if the movement of refugees increases with the length of border between source and destination country. Irrespective of the side of the coin (push or pull) the variable on border length is expected to be positively correlated with the movement of refugees.

ECONOMIC STATUS

There are two variables used in this study to determine the economic status of source and destination countries, and also to investigate how this determines refugee migration. The per capita GDP of source and destination country are used and a variable coded as 'difference' is separately calculated for the push and pull factor analyses. For the push factors, this variable is the source country per capita GDP less the average of all possible destination countries for each year. Some destination countries have not been included since refugees to these countries

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[32]Both the civil liberties and political rights indices are measured on a one-to-seven scale, with one representing the highest degree of freedom and seven the lowest. "F," "PF," and "NF" respectively stand for "free," "partly free," and "not free." Countries whose combined averages for political rights and for civil liberties fall between 1.0 and 2.5 are designated "free"; between 3.0 and 5.5. "partly free"; and between 5.5 and 7.0 "not free."

are not considered[33], either because such countries fall outside the study area or they lack data on the variables. The per capita GDP of source countries is mainly controlled for to see if economic conditions form part of the consideration for refugees to take the initial decision to leave their home country. This is important if we think of the fact that some people choose to be displaced within their country instead of being refugees.

Conversely, the economic status of the destination country is also a very important variable that might attract refugees. In addition to the initial level of per capita GDP of destination countries, the 'difference' variable included is the per capita GDP of one destination country minus the average of per capita GDPs of all other destination countries for a particular source country. It is also meant to ascertain whether economic considerations are made as to choice of destination countries. Why would more refugees from Afghanistan go to Iran instead of India, Pakistan or Uzbekistan? Is it because of the higher Iranian GDP per capita compared to the average of per capita GDPs from the three other destination countries? These will be the question this variable seeks to answer.

The result of this variable (both in the push and pull regressions) will substantiate, or deviate from, the well known distinction between economic migrants and refugees. This variable is not expected to have any relationship with the movement of refugees. Refugees are not expected to take conscious decisions especially on economic grounds, subject to the nature of their flight and the main purpose of fleeing-insecurity.

In addition to all the variables discussed above, dummy variables have also been created for floods, earthquakes, droughts and famine. I also capture geographical proximity by the length of border distance in kilometres between source and destination country. Tables 6.1 give information on the descriptive statistics for all the variables. The methodology used in this chapter is now explained because it differs from that used in the rest of the study, as explained in chapter 2.

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[33] DR Congolese to France, Ethiopians to Djibouti, Sweden, and the UK, Sierra Leonenas to Liberia, and Ugandans and Chadians to Sudan are the only exceptions. All other destination countries have data and fall within the study area (UNHCR, 2002:91-94).

6.6 METHODS

This section uses a pooled time series cross section estimated by Ordinary Least Square method. A panel data method is not appropriate in this case since very important time invariant factors (like number of borders and length of borders) with source and destination country cannot be included in a fixed effect analysis[34]. The theoretical framework of this chapter is not based on the Solow growth model like the other chapters in this study because this chapter does not explain the differences in growth rate among countries in the study. Rather, it empirically analyses the factors that influence the decision to leave one's country and the choice of destination. In this case, a related issue to the study is estimated through the use of a different framework. The appropriate model to use is that of international migration which explain factors influencing the movement of people. The literature distinguishes between two types of international migration: permanent and temporary migration.[35] However, a general migration model could also not perfectly fit into the framework of refugee migration because the migration models usually concentrate on explaining income differences between two countries as a stimulant to migration. These models assume other non-pecuniary factors that determine migration which then could be applied in the refugee case. In essence, the decision to migrate based on expectations of higher income in the destination country is related to the decision of refugees to migrate based on the expectations of a more peaceful environment[36]. Most studies hold that people migrate when the cost of migration is lower than the expected benefits in the destination country. The expected benefits have been largely related to income; consequently, the studies compared wage rates and employment differences between two countries as a key determinant of emigration (Hatton 1993 and Karayalcin 1993). In this chapter, similar analyses are made but security situations and political stability of countries are expected to be key factors in stimulating refugee migration although the economic aspect is also incorporated. Therefore, the results of this study can be compared with previous related studies.

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[34] However, the random effects model of the panel data could also be used.

[35] See Karayalcin (1993) whose work studied both forms of migration. The work of Galor (1986, 1991) is also widely referenced on this issue even though he mostly treats permanent migration.

[36] This applies when one still believe that the underling motive for refugee migration is the search for a more peaceful environment which is the specific case of conflict refugees. But it could also not be completely ruled out that refugee movement is associated with economic motives though these could not be the prime reasons for migration.

6.6.1 A theoretical model

Karayalcin's (1993) model of temporary migration relates closely to the movement of refugees wherein people migrate in the first period of their lives and gain income which they then invest upon return. More specifically, the framework of the migration model developed by Hatton (1995) is loosely used in the analysis of this chapter[37]. Hatton developed a model which explicitly incorporates uncertainty into the migration decision and accounts for the formation of expectations about future income streams based on past information. He maintained that the probability of migrations depends on the difference in expected utility at home (h) and abroad (f). That is, for a given individual, i, in a given time period (say a year), this difference can be represented as:

$$d_i = Eu\left(y_f\right) - Eu\left(y_h\right) + z_1 \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (1)$$

where y is income, and the subscript represents income abroad and at home. z_i is the individual's non-pecuniary utility difference between staying at home and migrating. This may also include the cost of migration which, if high, relative to the benefits will be a deterrent to move. However, in this study, the non-pecuniary motives of migration are not within the decision of the refugee migrants. They are exogenously determined by factors such as conflicts, natural disasters, economic situation, and so on. These factors may also be related to the economic gains; the model in this study does not ignore the possibility of such influences. Rather, the model above is extended to include several non-pecuniary factors. The theoretical model is, therefore:

$$d_1 = Eu\left(y_f\right) - Eu\left(y_h\right) + z_1 \ldots + z_n \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (2)$$

The difference between equation 1 and 2 is that in the latter, the model is extended to include several non pecuniary motives of migration $\left(z_1 + z_n\right)$. It is the effects of these external non-pecuniary factors on the decision to migrate and the choice on where to move to that are analysed in this chapter. An empirical model to the theoretical one above is now presented below:

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[37] Karayalcin's model is less applicable because of the second period extension of this model since the study only looks at determinants of refugee movement and not what happens to the refugees themselves especially after the migration experience.

6.6.2 EMPIRICAL MODEL SPECIFICATIONS:

6.6.2a Determinants of Refugee Movement: *Push Factors*

Analysis in this section are only about source countries and has three dependent variables[38]

1. The flow of refugees calculated as:

$$refugees_{t+1} - refugees_t \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (3.1)$$

2. The stock of refugees from source country relative to its population

$$\frac{stock_{jt}}{population_{it}} = \alpha + \beta_1 Z_1 + \beta_2 Z_2 + \beta_3 Z_3 + \beta_4 Z_4 + \beta_5 Z_5 + \beta_6 Z_6 + \beta_7 Z_7 + \varepsilon \dots\dots\dots (3.2)$$

Where:

$\dfrac{stock_{jt}}{population_{it}} =$ Number of refugees from 1990-1995 for each 'source country' normalized by

the population.

$Z_1 =$ Per capita GDP of source country

$Z_2 =$ Difference between source country per capita GDP and average of destination

   Countries per capita GDP.

$Z_3 =$ dummy variables for conflict

$Z_4 =$ Natural disaster dummies

$Z_5 =$ number of borders of sending countries

$Z_6 =$ Country size variables (alternatively using land and surface area in km)

$Z_7 =$ Political instability (alternatively using coups, demonstrations, riots, strikes)

$Z_8 =$ Freedom house indices (civil liberty and political rights)

$\varepsilon =$ error term

3. And a third dependent variable which the total number of refugees leaving a country in each year.

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[38] The three dependent variables use the same independent variables. Therefore they are only stated for one model.

6.6.2b Determinants of Destination Choice: *Pull Factors*

$$\frac{stock_{ijt}}{stock_{1...njt}} = \alpha + \beta_1 Z_1 + \beta_2 Z_2 + \beta_3 Z_3 + \beta_4 Z_4 + \beta_5 Z_5 + \beta_6 Z_6 + \beta_7 Z_7 + \varepsilon \text{......} (4.1)$$

Where:

$\dfrac{stock_{ijt}}{stock_{1...njt}}$ Total amount of refugees from source to destination country in each year

relative to all other destination countries[39].

Z_1 = Per capita GDP of destination country

Z_2 = Difference in per capita GDP of destination country and average of other destination countries

Z_3 = Border length between destination and source country

Z_4 = Conflict variables

Z_5 = number of borders of destination countries

Z_6 = Country size variables (alternatively using land and surface area in km)

Z_7 = Freedom house indices (civil liberty and political rights)

ε = error term

These models are now tested against the available data and results discussed in the next section.

6.7 EMPIRICAL RESULTS

This section includes two different sets of results. One empirically explains the determinants of refugee movement (table 6.3) and the other (table 6.4) clarifies the factors that attract or dissuade (as the case may be) refugees from particular destination countries. Both results are separately explained.

6.7.1 Determinants of refugee movements

The variables in this section exclusively explain why refugees in, say, Sierra Leone left that country in the first place. The annual data of refugees fleeing 39 countries in sub-Sahara Africa from 1990 to 1995 has been used in a pool cross section. Results discuss the economic

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[39] This does not, however, include developed countries, receiving countries with missing data, etc. Please see the section on 'The data' for an explanation of criteria for the inclusion of destination countries.

and conflict situation of the 'sending countries', the prevalence of natural disasters, their proximity to other countries, the sizes of the sending countries (including their population sizes), and the general political instability situation for the period mentioned above.

Table 6.3 presents estimates on the determinants of refugee movement. As stated in section 6.6.2, three main dependent variables are estimated with the fourth dependent variable-'refsource' used to test for the robustness of the results. The five columns (1.1-1.5, 2.1-2.5 and 3.1-3.5) for dependent variables 1-3 contain estimates of the same specification[40]. The first specifications for each of the dependent variables observe the combined effect of the economic and conflict situation of source countries. This is the benchmark model which is used for all other specifications. In the second columns, the political rights and civil liberty indices are controlled for, while the third columns add natural disaster dummies. In the fourth columns, country specific variables (population size[41], surface and land area, and number of border) are added but results are only reported for one of these variables since they produced similar effects but the other results are also discussed. In the fifth columns, the three dummy variables for conflict are replaced by 'Dconflict' which is also a conflict dummy variable testing for the effect of conflict on refugee movement irrespective of the type of conflict. The results are now explained across the different specifications.

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[40] Columns are numbered in such a way that the first number stands for a dependent variable and the second a specification. Therefore, all the same second numbers have the same specification irrespective of the dependent variable, except for 4.1 and 4.2 wherein they refer to a different source of data and the dependent variable is different.

[41] Note that the variable, population size is not included in the estimation for the second dependent variables since it is normalized by sending country population.

Table 6.3 Factors that determine the movement of refugees: Push Factors
(Results with three dependent variables 1.1-1.6, 2.1-2.6 and 3.1-3.2)

Variables	Refugee Flow (1)					Share of Refugee per sending country's population (2)					Absolute number of refugees from sending countries (3)					Refugee source (4)	
	1.1	1.2	1.3	1.4	1.5	2.1	2.2	2.3	2.4	2.5	3.1	3.2	3.3	3.4	3.5	4.1	4.2
Difference	41.562 (1.82)	53.711 (2.27)	42.004 (1.79)	44.058 (1.79)	16.291 (0.78)	2.290 (0.90)	1.470 (0.55)	2.510 (0.98)	4.550 (1.24	4.990 (1.49)	-18.596 (-1.01)	-18.036 (-0.94)	-19.864 (-1.06)	6.369 (0.25)	23.023 (1.52)	0.0004 (0.02)	-0.006 (-0.32)
YGDP	2.600 (0.22)	-9.409 (-0.71)	1.119 (0.09)	-2.212 (-0.18)	-0.118 (-0.01)	-1.790 (-1.37)	-7.980 (-0.53)	-2.140 (-1.61)	-2.990 (-1.60)	-1.280 (-1.25)	-14.004 (-1.48)	-12.140 (-1.12)	-15.584 (-1.61)	-18.436 (-1.44)	-5.939 (-1.29)	-0.004 (-0.39)	-0.003 (-0.33)
DMincon	103309 (1.70)	123975 (2.03)	107211 (1.65)			0.018 (2.66)	0.017 (2.42)	0.017 (2.49)			53094 (1.08)	58020 (1.16)	47326 (0.95)				
DIntcon	521362 (4.43)	566365 (2.03)	523910 (4.37)			0.233 (15.36)	0.230 (14.94)	0.234 (15.42)			1426787 (12.98)	1428233 (12.86)	1438095 (13.03)				
DWar	-82800 (-0.80)	-33528 (-0.32)	-89833 (-0.84)			0.029 (3.20)	0.026 (2.85)	0.028 (3.06)			434732 (6.66)	434630 (6.52)	427198 (6.47)				
Dconflict				148607 (2.66)					0.055 (6.71)		59762 (2.40)			387600 (6.91)			
Polit rites		7686 (0.41)					0.002 (1.09)					30178 (1.95)					
Civil lib.		-43328 (-1.51)					-0.001 (-0.17)					-36893 (-1.57)					
Famine			10516 (0.07)					0.006 (0.44)					116706 (1.21)				
Drought			8111 (0.14)					-0.006 (-1.01)					-7092 (-0.18)				
Earthquake			-102339 (-0.48)					-0.019 (-1.02)					-24921 (-0.18)				
Flood			-27126 (-0.54)					-0.012 (-2.01)					-71599 (-1.64)				
Sufarea				-0.044 (-1.12)					-1.570 (-2.64)					-0.063 (-1.55)			
Coups					576919 (5.84)					0.052 (5.29)					205147 (4.61)	194.67 (2.64)	227.806 (3.33)
Crises					21007 (0.39)					-0.010 (-0.93)					-56724 (-1.20)	78.716 (1.04)	
Guerwar					156225 (1.67)					0.008 (0.86)					305019 (7.40)	335.03 (5.40)	304.045 (5.22)
Rev					-94165 (-2.32)					0.007 (1.28)					47000 (1.88)	21.545 (.58)	
Demons					-14231 (-0.46)					-0.001 (-0.05)					-63.652 (-0.00)	-38.554 (-1.35)	

Variables	Refugee Flow (1)					Share of Refugee per sending country's population (2)					Absolute number of refugees from sending countries (3)					Refugee source (4)	
	1.1	1.2	1.3	1.4	1.5	2.1	2.2	2.3	2.4	2.5	3.1	3.2	3.3	3.4	3.5	4.1	4.2
Riots					35379 (1.04)					-0.002 (-1.03)					-11051 (-1.14)	0.830 (0.05)	
Strikes					-85989 (-2.38)					0.009 (0.46)					129416 (1.52)	-42.282 (-0.53)	
Assas					84196 (2.35)					0.005 (0.69)					30622 (0.96)	-7.597 (-0.13)	
Avdeaths										5.240 (5.11)					84.117 (18.22)	0.073 (8.71)	0.073 (9.39)
Civil										0.027 (3.67)					198046 (5.94)	59.579 (0.84)	79.903 (1.27)
Constant	-13768 (-0.45)	163209 (1.72)	-6104 (-0.17)	16520 (0.43)	-4593 (-0.15)	0.009 (2.53)	-0.002 (-0.15)	0.013 (3.19)	0.0179 (3.07)	0.006 (1.87)	59762 (2.40)	77501 (1.00)	72802 (2.55)	95937 (2.39)	24423 (1.80)	25.569 (0.86)	11.939 (0.46)
R^2	0.18	0.21	0.18	0.08	0.35	0.63	0.64	0.65	0.27	0.89	0.60	0.61	0.61	0.28	0.98	0.81	0.80
Adj	0.14	0.16	0.11	0.05	0.29	0.62	0.62	0.63	0.25	0.84	0.59	0.59	0.59	0.26	0.97	0.78	0.78
N.	116	116	116	116	116	155	155	155	155	39	155	155	155	155	39	77	77

t-statistics in parenthesis
see table 6.2.1 for the definition of variables

The economic situation of sending countries is always included in the specifications to test for the widely held view that the movement of migrants in general is associated with expected economic gains in the foreign country, and to ascertain whether this holds for the movement of refugees. The difference in per capita GDP between sending countries and destination countries shows different effects depending on the dependent variable. It shows that having a high per capita GDP relative to countries receiving refugees (flow and relative to population) increases the number of refugees sent. It is the opposite in the case of the total number of refugees sent but insignificant. This is counter intuitive since one would expect the opposite to hold. The results reject the proposition that the movement of refugees is based on home country economic situation compared to destination countries economic situation. It is now important to see the results on the economic situation of the sending country itself and to determine how this influences decisions to leave.

The economic situations of home country show marginal significant levels in the case of the relative and absolute numbers of refugees sent. Although this variable is marginally significant a few times, the results suggest that if the home country GDP per capita is high, fewer refugees will move. This is particularly clear in the case of the absolute number of refugees. The results show that a 1 percentage point increase in sending country per capita GDP leads to approximately 18 fewer refugees leaving their countries of origin in sub-Saharan Africa; this increase in GDP further reduces the outward movement of refugees to roughly 3 per 1000 of the country's population. This suggests that the economic status of the source country is a possible contributing factor in the prior decision making process of refugee movement. Hatton and Williamson (2001[42]) also found similar effects; home GDP enters their regression with a negative sign as expected. They explained that good economic performance in the local labour market keeps potential emigrants at home. Mayda (2003) too, found that a lower level of GDP per worker in the source country strengthens the incentive to migrate. She added, by contradicting the findings that the low income also makes it more likely for a larger portion of the population to be unable to move if fixed costs are required and there are credit-market imperfections. Findlay and Sow (1998[43]) studied short and long term migration among rural households in the Senegal River valley in Mali. The authors found that the poorer the family, the more likely its migrants would remain in Africa, thereby

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[42] These authors' work is mainly on emigration from Africa but they also estimated the determinants of refugee migration. However, they only controlled for political instability variables.
[43] As cited in Hatton and Williamson (2003).

suggesting that the poverty constraint affected the decision to move. This scenario is not a problem for refugees moving across sub-Sahara Africa since most of the borders can be reached by car or on foot.

However, the data for this study questions the effect of the economic situation on the decision to leave and suggests that this influence is weaker than suggested elsewhere in the literature. Preliminary tests on the data show that the economic situation of sending countries matters most when conflict is not controlled for[44]. When controlling for conflict[45] and per capita GDP, conflict maintains a significantly positive effect on the movement of refugees, whereas home per capita GDP seizes to be of relevance. This means that, with the presence of conflict, the economic situation seizes to matter. These results can be said to be consistent with the theory.

The case of conflict as a leading factor behind the refugees we see today is clear from these results. All three types of conflict are statistically significant across different specifications and even when different dependent variables are used. For the presence of intermediate conflict and war, (both of which are significant at the 1% level), we see more refugees leaving a country. Although intermediate conflicts 'push' more refugees, in absolute, -- 3.1-3.3 -- and relative, terms, -- 2.1-2.3 --, than war, the fact that the results on intermediate conflict and war proved to be stronger factors in the determinants of refugee flow, than minor conflict is consistent with initial expectations of this study[46]. These results also indicate that Africa will see more refugees if the prevalence of intermediate conflict and war continue. Looking at table 5.7 in chapter 5, Africa has more intermediate conflict and war than compared to Asia and Latin America. Generally, the presence of conflict, irrespective of the its type, indicates a negative and significant (at the 1% level) effect on the flow, relative and total number of refugees that leave a country (1.4, 2.4 and 3.4) further indicating that the effect of conflict on refugee emigration is robust.

The variables on political rights and civil liberty are used in columns 1.2, 2.2 and 3.2 but they are marginally significant in their predictions on total refugee movement. A high index of

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[44] These results are not shown because of very low explanatory power, they are bivariate regressions but per capita GDP is negative and significant at the 5% level when estimated on the total number of refugees and relative refugee population dependent variable.

[45] Hatton and Williamson (2001:29) did not control for economic situations except for political instability in their specification on the determinants of refugee movement in Africa.

[46] Intermediate conflict and war are referred to as major armed conflict in the 'States in Armed Conflict report' (Sollenberg 2000).

political right (low degrees of political freedom) sends out more refugees and the reverse is true for civil liberty. The political right index is statistically significant than the civil liberty, indicating that political rights are more highly considered than civil liberty in the decision to leave one's country. This is understandable since it is low political rights, more than civil liberty, which is likely to induce rebellion.

Natural disasters (famine, droughts, earthquakes and floods) do not present good motivation for the movement of refugees. The variables (1.3, 2.3 and 3.3) show weak significant levels with surprising signs; this suggests that they are not important in explaining the movement of refugees. Another specification tried the non-linear form of these variables but results are not significantly different from what the linear form shows, so they are not reported. A possible reason for this could be that most of these situations (earthquakes, famine, droughts[47] and floods) rarely occur in most countries in sub-Sahara Africa. However, even where they do occur, they might be brief so people resettle at a faster pace than after conflict situations which usually last longer.

In columns 1.4, 2.4 and 3.4, a specification is estimated using country specific variables. Not all results are shown for this specification since the results are similar, but they are discussed. A country with a large surface area[48] sends out fewer refugees. This is also consistent with experience since people prefer to be internally displaced into relatively safe regions within the same country than to become refugees. A specification with the number of borders shows this variable to marginally contribute to the movement of refugees in absolute terms. This is very intuitive indicating that refugees will always use the only outlet possible, even in the presence of only one border, if situations that lead to the movement of refugees exist within a country.

The fifth column for the three dependent variables estimates the effect of political instability on refugee movement. These results cannot be compared across specification (especially for model 1 and the two others) since two political instability variables (civil and average deaths) are not included in model one due to unavailability of data. However, the prevalence of *coups d'etat* increases the number of refugees who leave a country, while other political unrest like revolutions, riots and demonstrations are less likely to send people away. In the case of the

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[47] Famine and drought are common in the East Africa region, especially in Ethiopia.
[48] These results are consistent when land area is used but since the surface area definition includes land area, the former variable is reported.

relative and total number of people that leave their country, average deaths and civil war increase outward movement. The average deaths in a conflict are more significant in determining the number of people who leave their country. This result is consistent with earlier predictions in this study about the intensity of conflict. Therefore, the more deaths are reported, the heavier the conflict is likely to be, and the larger the numbers of people who will leave their countries. The results in column 5 for each dependent variable are again tested with the use of a different dependent variable.

The variable (refugee source) is also the relative flow of refugee (refugee per 1000 of the population) but it is from a different source[49] (World Refugee Survey of the United States Refugee Council, USCR). The results show that *coups d'etat*, guerrilla warfare, and military deaths in civil war positively and significantly increase the number of refugees who leave a country. Coups are a good indicator of political unrest in a country and they are typical of many African countries. They greatly reduce investors' confidence in the economy and hence frighten them away. The average number of deaths of the forces involved in the conflict also signals the intensity of the conflict. Revolutions, strikes, riots, demonstrations and assassinations[50] showed a weak effect on the movement of refugees. Government crises showed a positive, but insignificant, result. Halton and Williamson (2001) who carried out a similar investigation discovered, however, that a government crisis significantly increases the movement of refugees. They noted that although government crises are not always associated with widespread violence; perhaps fear of violence accounts for the surprisingly large effect on refugee creation.

Finally, an examination of the explanatory power of the specification further lends strong support to the results on the determinants of refugee movements. The specifications explain more of the variation in the relative and total number of refugees leaving countries in Africa than the annual flow. In these specifications, general political unrest in addition to conflict explains up to 84 to 97% of the movement of refugees in Africa. This demonstrates that conflicts and other conflict-like situations produce more refugees. The remainder of the results will probe the movement of refugees in terms of the choice of destination countries.

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[49] Obtained from the Africa Research Program at Harvard University http://africa.gov.harvard.edu//

[50] The correlation results of these variables showed that they can be jointly used with no harm on the results. Even when tried singly, the results are not significantly different from using all of them in the same specification.

6.8 WHERE DO REFUGEES GO AND WHY? *Factors that determine refugee's choice of destination Country.*

The majority of refugees from Afghanistan between 1991 and 2000 are found in Iran; they also went to India, Pakistan and Uzbekistan. The majority of refugees from Congo DR are found in Tanzania; they also went to Angola, Burundi, Central Africa, Congo, Rwanda, Uganda and Zambia. Similarly, most refugees from Vietnam are found in Thailand and the Philippines. It is generally accepted that refugees cross the nearest border; but it is interesting to look at how they move when they have several (borders) destination options. Why would they go to one country in larger numbers than others, or be deterred from migrating to some of their other neighbouring countries[51]? This is the key question addressed in this section. The section investigates whether the length of border (in kilometres), number of border, economic situation, human rights status (in terms of freedom) and conflict situations of the destination country serve as attractive/dissuasive incentives for refugees. Considering that almost all countries have several borders, why do they receive significant differing numbers of refugees?

A common observation of the data on the movement of refugees from source[52] to destination countries confirms the widely held view that refugees move to neighbouring countries; that is, countries with which they share borders. However, this was not a consistent pattern since Afghans went to India, Salvadorans to Costa Rica and Nicaragua, Liberians to Ghana and Nigeria, Rwandans to Congo and Kenya, Sierra Leoneans to The Gambia, and, finally, Vietnamese to the Philippines and Thailand. None of these destination countries have direct border links with the source countries, even though most of them may be within close proximity.

6.8.1 RESULTS ON DETERMINANTS OF DESTINATION CHOICE

From the estimation of the regressions, it became evident that the key variable of importance to be explained is the share of refugees in a destination country relative to selected destination countries, rather than the share of refugees in a destination country relative to its population. This is to be expected since the aim of this sub-section is to explain why refugees choose

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[51] Afghans also went to Tajikistan, Turkmenistan and other developed countries. But these two countries are not part of my dataset, and they are, therefore, not included. However, Afghan refugees to these countries are only in their hundreds. They could also have gone to their neighbour, China. Vietnamese could also have gone to Cambodia and Laos, both of which are their neighbouring countries. Refugees from Congo DR went to almost all countries sharing borders with this country (except to Sudan) in different proportions.

[52] "Source country" means countries from which the refugees come.

country A as a destination over country B. Results are only presented for this variable instead of the share of refugee per population as expected earlier on.

Several variables were also expected to influence a refugee's decision on the choice of destination country. However, only those found to usefully explain this movement are presented; an explanation is given (even if the results are not shown) for variables initially expected to be useful but which were discovered to be unhelpful. The freedom status of destination countries also has three variables. The third (freedom) is the result of the average of the civil liberty and political rights variables. It is, therefore, used alternatively with these two variables. Civil liberty and political rights variables are first used jointly and, then individually; the results are discussed accordingly.

Table 6.4 has 10 specifications, each with a different combination of variables consisting trial with similar variables. There were several variables meant to be used alternatively for fear of their level of correlation biasing the results. Even though speculatively these variables might affect each other, several techniques or simple statistical manipulations[53] indicate that this is not the case. Therefore, some of the variables are jointly used.

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[53] This refers to the initial GDP per capita and the 'difference' between destination countries' GDP per capita and the average of GDP per capita of all other destination countries, as well as to the number of borders (nobord) and the border shared (in kilometres) variable. Trying each of these variables separately in different regressions produced weaker fits than when they are tried jointly. So some specifications have used both sets of variables jointly since this is found to cause no harm.

Table 6.4: Factors that determine refugees choice of destination country: Pull factors (Dependent variable is share of refugees in a destination country relative to other selected destination countries)

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
gdpini	0.001									
	(1.53)									
Difference		0.001	-0.002	-0.002	-0.002	-0.001	-0.002	-0.002	-0.002	
		(0.87)	(-1.78)	(-2.31)	(-2.14)	(-1.99)	(-1.98)	(-1.69)	(-2.09)	
GDPyr			0.003	0.004	0.003	0.002	0.002	0.002	0.003	0.001
			(2.97)	(3.65)	(3.06)	(2.31)	(2.27)	(2.10)	(2.88)	(1.96)
Borsh								0.037		
								(2.30)		
Nobord	0.017	0.017	0.020	0.020	0.023				0.024	0.024
	(3.04)	(2.93)	(3.43)	(3.45)	(3.99)				(4.20)	(4.09)
Civlibav	0.067	0.064	0.065	0.021						
	(3.04)	(2.91)	(2.92)	(1.67)						
Polritsav	-0.044	-0.045	-0.039		0.0005					
	(-2.82)	(-2.93)	(-2.39)		(0.05)					
Free						0.030	0.029	0.010	0.052	0.065
						(0.44)	(0.43)	(0.16)	(0.78)	(0.95)
Partly Free						0.030	0.027	-0.0009	0.011	0.016
						(1.04)	(1.00)	(-0.04)	(0.45)	(0.63)
Population			-0.0003	-0.0002	-0.0002	-0.0004	-0.0003	-0.0002	-0.0002	-0.0002
			(-2.39)	(-1.90)	(-2.04)	(-2.98)	(-2.88)	(-1.54)	(-2.06)	(-1.62)
Surface area						4.880				
						(2.81)				
Land area							4.830			
							(2.69)			
Mincon										-0.017
										(-0.42)
Intcon										0.041
										(0.97)
War										-0.007
										(-0.20)
Constant	0.056	0.105	0.005	0.007	0.103	0.186	0.199	0.210	0.095	0.120
	(0.82)	(1.83)	(0.07)	(0.10)	(1.66)	(5.87)	(5.94)	(7.32)	(2.23)	(2.84)
No. of Obs	750	750	740	740	740	740	740	740	740	740
R^2	0.03	0.03	0.04	0.04	0.03	0.02	0.02	0.02	0.03	0.03
Adj R	0.02	0.02	0.04	0.03	0.03	0.01	0.01	0.001	0.03	0.02

(t-statistics in parentheses)
see table 6.2.1 for the definition of variables.

The results show that the initial level of per capita GDP of a country positively correlates (at a marginal significant level) with the relative number of refugees it receives. This means that countries with a high per capita GDP are more likely to attract more refugees. This result is similar to what Neumayer (2003) found when he investigated why asylum seekers coming to Western Europe have preferred some destination countries over others. He found that richer

destination countries receive a higher per capita share of asylum seekers. Although it sounds implausible to directly compare per capita GDP effects on destination countries between South and North migration, the results of this study and that of Neumayer, can be compared directly because countries with similar characteristic have been used as destination countries. Considering the results of the coefficient of per capita GDP it is highly unlikely that refugees will choose a country in the developing regions based on its economic status. This is, however, a hasty conclusion since other economic determinant variables were alternatively used in addition to the initial per capita GDP variable of destination country.

The difference in initial per capita GDP of a destination country from the average of all other selected destination countries shows mix results. In the first instance, when used without controlling for the economic situation of the destination country itself, in column 2, the variable showed a positive effect but one that was insignificant as to warrant any explanation. Alternatively, when the 'difference' variable is used together with the annual per capita GDP (from 1991-2000) of the destination country, it shows a significant negative effect. This suggests that having a higher per capita GDP compared to the average of other receiving countries reduces (though marginally) the attraction to refugees. This is counter intuitive even though the simple observation of the data suggested this trend. The per capita GDP of refugee hosting countries suggests a strong attraction as this variable remains positive and significant in different specifications. Apart from this general attractiveness, however, economic factors do not impact upon the choice of the destination country in accordance with my expectations, also confirming Neumayer's (2003) findings.

My results also indicate that the destination choice of refugees is influenced by the proximity of the destination country to the source country. This is seen when we focus on the results of the number of borders a destination country has, but especially so on the length of border in kilometres that a destination country share with a source country. Mayda (2003) found similar results in her panel data analysis of economic and non-economic determinants of international migration. She noted that another determinant of bilateral immigration flows is the distance between the two locations. It is highly significant that the longer the border a destination country shares with a source country the more refugees it will attract. This is subject to refugee 'pushing factors' present in the source country. The length of border distance maintains its significant positive effect as an attraction for refugees even when one controls

for destination countries' conflict status[54]. There is a strong statistical relationship between the number of borders a country has and the relative share of refugees it receives. It is, therefore, not surprising that Congo DR (with 9 borders), which has experienced many years of conflict still attracts many refugees. Tanzania, with 6 borders, also receives refugees from several countries.

Civil liberties positively and significantly affect refugees' decision on destination country choice. In contrast, the political rights index has a negative significant effect when used jointly with the civil liberty index. The results show that an increase in the civil liberty score, which signifies a decline in civil freedom, attracts more refugees relative to an increase in political rights index which produces the opposite effect. This means that political rights are considered more seriously than civil liberties in the choice of destination countries. This is contrary to expectation. Refugees[55] usually do not participate in the political processes in their asylum countries. One would, therefore, have expected that rights that grant them freedom to develop their views, institutions and personal autonomy from the state would impact on their choice of destination more prominently. However, one is tempted to believe in other political issues that are connected with refugee movements in the asylum countries. Political tensions among citizens shown by their support for a political party will suggest how much hosts like or detest the presence of refugees. This means that a more politically liberal society is expected to be more receptive to refugees. The results suggest that refugees consider this aspect more than civil liberty, a factor which is understandable given that refugees may think of their stay in the destination country as temporary. Consequently, incentives to develop views, institutions, and so forth, are very low, thus foregrounding refugees' desire to live in peace with their hosts.

When civil liberty and political rights are used separately (columns 4 and 5) civil liberty maintains its positive effects and political rights switches sign seizing to be of any importance. A third variable meant to further capture the effect of freedom as an attraction to refugees is also used. The combined average between civil liberty and political rights group countries into free, partly free and not free. Dummy variables are then created from this information, 1 if a

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[54] These results are not shown but border length has a coefficient of 1.04 (2.54) when we control for the three types of conflict in the destination country.
[55] This is especially for refugees in Africa. In developed countries, refugees may obtain citizen status which will also give them voting rights.

country is free, partly free or not free and 0 otherwise. Two of these variables are used; the third one is dropped. The results show that being free or partly free compared to those countries that are not free, is of no significance in the attraction of refugees.

Several other variables were also used to capture the size of the destination country effect. The population of a destination country shows that the more people living in a country, the fewer refugees it attracts. Countries like Nigeria, India, and so forth, fall into this category. The population variable maintains its level of significance and a negative effect on attracting refugees even when used with other country size determinant variables. Population becomes significant at the 1% when surface and land areas are separately controlled for. The surface and land area of a country are very attractive enticements for refugees. A larger country receives more refugees although this is also conditional on its population size.

Not surprising from the observation of data, but contrary to theory, variables on the conflict situation of the destination country, the 3 conflict dummy variables (mincon, intcon and war), are not useful in determining the choice of destination country. These variables were tried in several other specifications and they continued to show mixed signs, suggesting that they neither dissuade nor attract refugees from a country; they are also not significant.

6.9 CONCLUSION

This chapter has successfully explained, with empirical results, factors that determine the movement of refugees and those that determine the choice of destination country. It is evident that there are different factors at play in driving the movement of refugees. Whereas the economic status of a destination country matters in attracting refugees even if it is in conflict (column 10 of table 6.4), the economic situation of source countries only matters when such countries are not in conflict. People will leave their rich countries for other countries if the former is in conflict. Those countries with a good economic status (not necessarily in relation to the economic status of other destination countries) will attract more refugees.

Conflict proved to be a major factor influencing the decision to leave but not the decision on the choice of destination country. The data in this study supports this study's initial claim that refugees are generated by prevailing conflict situations in developing countries -- see table 1.5. The type of conflict, and more especially the difference between minor and intermediate

conflict, does also seem to matter in determining the movement of refugees. This has implications for the different effects of conflict in determining the movement of refugees and their choice of destination countries. Conflict resolution should be strengthened in countries that send more refugees since this will reduce the movement of refugees. The focus should be on the source country rather than the destination country which does not seem to affect a country's attraction to refugees. However, since most countries are 'producers' as well as hosts to refugees, conflict resolution should be strengthened in all countries in conflict.

The effect of freedom on the initial decision to leave and the choice of destination country is consistent with theory and intuition. The political right variable is significant and positive in sending countries. This means that lower degrees of political freedom send more people into exile. The opposite is true in the attraction of refugees. Countries with a high index on political freedom attract fewer refugees.

In conclusion, political freedom is important in both the decision to leave and the decision on destination country choice. Similarly, the civil liberty variable is negative in the determinant of refugee movement regression, indicating that a high civil liberty index (low degrees of freedom of civil rights) sends out fewer refugees. However, a high civil liberty index attracts more refugees. The implication here is that civil liberties matter less than political freedom in attracting refugees (since refugees still go to countries even if civil liberties are low) and in sending refugees. Consequently, for countries with few political rights, one should expect to see more of its citizen in other countries whose political freedom is high. Therefore, if the aim of policy makers is to reduce the movement of refugees, political freedom should be advocated for in countries with low degree of freedom.

This study has empirically established the theoretical claim that conflicts lead to the movement of refugees. However, the reverse could also be possible; that is, refugees are themselves possible sources of conflict. Although refugees have been seen as direct 'products' of conflict, it would have been interesting to determine whether there is a reverse causation between conflict and refugees. The presence of refugees in some developing countries has

been known to increase the probability of conflict[56]. Empirical investigation of this sort remains a viable area for future research.

In the next chapter, a pertinent issue related to conflict is investigated: the effect of conflict on neighbouring countries is analysed in a Solow model transitional framework.

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[56] Though I cannot offer empirical studies in this direction, experience shows that Liberian refugees in Sierra Leone in the late 80s contributed to the on-set of conflict in the latter country in the early 90s, since rebel forces could enter the country on the pretext of being refugees. Further, the conflict in Guinea in the late 90s was attributed to the presence Sierra Leonean and Liberian refugees in that country.

6.10   APPENDIX TO CHAPTER SIX

Table 6.1. VARIABLES AND SOURCES OF DATA

VARIABLES	CODE	BRIEF DESCRIPTION	SOURCE
Dependent variables: refugees from source to destination countries			UNHCR 2000
Economic status	difference	Relative economic status of destination country. Asy-all other neighbour's GDP	Own computations from WDI
GDP per capita (1)	GDPini	Current ppp values into US $ constants 1990-2000. Initial condition of dest. country: 1991	World Bank CD Rom and PWT6.1
Conflict situation (Lagged) (6)	Mincon, intcon, war. Confdum	1 if Minor, intermediate conflict or war and 0 otherwise. 1989-2000. Confdum is also a dummy variable meaning 1 if there is any type of conflict and 0 otherwise	States in Armed Conflict 2000" 2001 Report
Number of borders (7)	Nobord	Number of borders of destination and source countries	WORLD ATLAS CIA
Borders in conflict (8)	Anbdcon	1 if a neighbouring country is in conflict and 0 otherwise. 1990-2000	LOOKING AT (6) AND (7)
Total Borders in Conflict (9)	Totbdcon	Ordinal variable =1 if one border in conflict and progresses	LOOKING AT (6) AND (7)
Border distance	Borsh	The distance in km of border between source and destination country.	CIA World Fact Book
Ethnic	Ethni02	Ethnic fractionalisation: a combination of language and racial characteristics	Easterly W. et al (2002)
Language	Lang02	The shares of languages spoken as 'mother tongues'	Easterly W. et al (2002)
Religious	Relig02	Religious fractionalisation	Easterly W. et al (2002)
Civil liberty	Civilibav	Freedoms for citizens to develop views etc scale of 1-7	Freedom House. www.freedomhouse.org
Political rights	Polritav	Enable people to participate freely in political process 1-7	Freedom House. www.freedomhouse.org
Freedom	Freedum	Civil liberty + political rights = 'F':1-2.5 'PF:2.6-5.5' 'NF':5.5-7	Own computations
Country Size	Land area Surface area	A country's total area, excluding area under inland water and surface area is land area plus areas under inland bodies of water and some coastal waterways.	World Bank CD Rom
Natural disasters	Flood, earth quark, drought and famine	Dummy variable meaning 1 for each disaster experienced and o otherwise	EM-DAT: The OFDE/CRED International Disaster Database- www.cred.be/emdat

Table 6.1 Cont.

VARIABLE	CODE	BRIEF DESCRIPTION	SOURCE
Number of Coups d'Etat	Coups	The number of extra constitutional or forced changes in the top government elite and/or its effective control of the nation's power structure in a given year. The term "coup" includes, but is not exhausted by, the term "successful revolution". Unsuccessful coups are not counted.	**BK**
Government Crises	Crises	Any rapidly developing situation that threatens to bring the downfall of the present regime - excluding situations of revolt aimed at such overthrow.	**BK**
Guerrilla Warfare	Guerwar	Any armed activity, sabotage, or bombings carried on by independent bands of citizens or irregular forces and aimed at the overthrow of the present regime.	**BK**
Revolutions	Rev	Any illegal or forced change in the top governmental elite, any attempt at such a change, or any successful or unsuccessful armed rebellion whose aim is independence from the central government.	**BK**
Anti-Government Demonstrations	Demons	Any peaceful public gathering of at least 100 people for the primary purpose of displaying or voicing their opposition to government policies or authority, excluding demonstrations of a distinctly anti-foreign nature.	**BK**
Riots	Riots	Any violent demonstration or clash of more than 100 citizens involving the use of physical force.	**BK**
General Strikes	Strikes	Any strike of 1,000 or more industrial or service workers that involves more than one employer and that is aimed at national government policies or authority.	**BK**
Assassinations	Assas	Any politically motivated murder or attempted murder of a high government official or politician.	**BK**
Civil War	Civil	Dummy: 1 = Civil War.	**SG**
Average Deaths in Civil Wars	avdeaths	Number of Battle Related Deaths Sustained by Participant's Armed Forces/years. Note that this is a somewhat crude desegregation of aggregate data treating deaths as occurring at a uniform rate during the war.	**SG**
Refugees from country	Refsource	'000 of Refugees originating from each country in a given year	**WRS**

Note:
BK: Banks, Arthur S. 1994 "Cross-National Time-Series Data Archive."
SG: Singer, Correlates of War Project data.
WRS: The U.S. Committee for Refugees' World *refugee survey*
This dataset contains dummy variables for coups, crises, civil and guerrilla wars which were used in the analysis of the determinants of refugee movements. The dataset is assembled by Robert Bates[57] from a range of sources.

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[57] Robert Bates is attached to the Africa Research Program at Harvard University; http://africa.gov.harvard.edu// is run with the support of the Harvard Centre for International Development and the Weatherhead Centre for International Affairs at Harvard, with the financial support of the World Bank and the National Science Foundation.

Table 6.2.1: Descriptive statistics for 'push' factor analysis (data is from 1990-1995)

Variable	Observation	Mean	Std. Dev.	Minimum	Maximum
Total refugees	156	99349	291034	0	2257600
Refugee flow	117	2121	214396	-938100	1807100
Share of refugee	156	0.013	0.042	0	0.36
Refsource	194	56.3	226.4	0	1725
Difference	233	-294	884	-4327	589
YGDP	234	1768	1641	470	7816
Political rights	234	5.1	1.8	1	7
Civil liberty	234	4.7	1.3	2	7
Famine	234	0.04	0.20	0	1
Drought	234	0.16	0.37	0	1
Earthquake	234	0.02	0.13	0	1
Flood	234	0.15	0.35	0	1
Land area	234	491130	502111	2030	2267050
Surface area	234	503686	514116	2040	2344860
Dmincon	234	0.13	0.34	0	1
Dintcon	234	0.02	0.14	0	1
Dwar	234	0.08	0.27	0	1
Nobord	234	3.9	2.31	0	9
Coups	234	0.05	0.21	0	1
Crises	234	0.15	0.42	0	2
Guerwar	234	0.01	9.24	0	1
Rev	234	0.27	0.52	0	2
Demons	234	0.42	0.89	0	6
Riots	234	0.32	0.89	0	7
strikes	234	0.12	0.45	0	4
Assas	234	0.12	0.45	0	3
Civil	117	0.09	0.29	0	1
avdeaths	117	683	3219	0	21882
Ethnic	234	0.79	0.66	0	5.42
Language	234	0.67	0.25	0.01	0.92
Religion	234	0.67	0.67	0.01	5.51

Where total refugees is the total number of refugees from source countries 1992 to 1995

Refugee flow is annual difference in the flow of refugees from each source country 1993 to 1995

Share of refugee is the ratio of refugee per source country population 1992 to 1995

Difference is the difference between source country per capita GDP and the average of all destination country for each source country 1990 to 1995

YGDP is the per capita GDP of source country 1990-1995

Political rights and civil liberty indices marked 1-7 from the freedom house data base.

Famine, drought, flood and earthquake are dummy variables for natural disasters

Land and surface areas are measured in Square kilometres. See table 6.1 for description

Dmincon, Dintcon and Dwar are dummy variables fro minor, intermediate conflict and war.

Nobord-the number of borders a country has.

For coups, crises and up to avdeaths (average deaths) see table 6.1 for explanation, data is from 1990 to 1992

Ethnic, language and religion are measure of fractionalisation

Table 6.2.2 Descriptive statistics for 'pull' factor analysis (data is from 1991-2000)

Variable	Observation	Mean	Std. Dev.	Minimum	Maximum
Refshare	750	0.27	0.31	0	1
Total refugees	750	104400	305542	0	3186600
Refpop	750	0.005	0.01	0	0.12
Population	750	37.32	108.5	1	1016
Difference	750	-28.16	1921.3	-5150	7182
YGDP	750	1788	1743	435	9520
GDPini	750	1737	1617	511	9520
Land area	750	785061	759318	10000	2973190
Surface area	750	813182	794040	11300	3287590
Dmincon	750	0.10	0.31	0	1
Dintcon	750	0.09	0.29	0	1
Dwar	750	0.14	0.35	0	1
Confdum	750	0.51	0.50	0	1
Nobord	750	5.2	2.12	0	9
Borlend	750	849	720	0	2511
Political rights	750	5.1	1.45	1	7
Civil liberty	750	4.9	1.04	2	7

Where Refshare is refugee in a destination country relative to other destination countries.

Total refugees is the total number of refugees in destination countries 1991 to 2000

Share of refugee is the ratio of refugee per destination country population 1991 to 2000

Population is the total population size of the country.

Difference is the difference between one destination country per capita GDP and the average of selected destination countries for each source country 1991 to 2000

YGDP is the per capita GDP of destination country 1991-2000.

Land and surface areas are measured in Square kilometres. See table 6.1 for description

Dmincon, Dintcon and Dwar are dummy variables fro minor, intermediate conflict and war.

Nobord-the number of borders a country has.

Borlend is the length of border (in kilometres) between a destination country and a source country.

CHAPTER SEVEN: CONFLICT IN NEIGHBOURING COUNTRIES

Civil wars should be considered an international problem, since they almost always affect and involve neighbouring states, thereby undermining regional stability (Brown 1996: 3).

7.0 INTRODUCTION

In chapter 5, we have seen the empirical relationship between conflict and GDP per capita growth in the economies in the midst of conflict. This study has also theoretically argued that conflict affects economic growth of developing countries significantly (see chapter 5). However, the effects of conflict have been known to spread across national borders in different forms. This is the investigative focus of this chapter. The effects of civil wars are not only felt in the countries were they are fought but also in neighbouring countries and beyond. In a world of increasing demand for globalization[1], states no longer exist in isolation, but are influenced by their interaction and exposure to the activities of other states (Gleditsch 2003).

A recent report by the World Bank (2003), which indicates the increasing awareness of conflict among development actors, also noted that civil war has spill over effects for both neighbouring countries and the entire international community. This chapter looks at the spill over effects of conflict on neighbouring countries in Africa, Asia and Latin America. Since the end of the 1980s, there has been a substantial increase in conflicts within states rather than between them. Yet, a considerable amount of the burden falls on neighbouring countries. The most obvious way this takes place is through the flow of refugees.

By now, there is a considerable amount of literature on the effects of conflict on host countries. There is also a growing body of literature that has started to look at the spill over effects of conflict in one country onto its neighbours. However, this has largely been limited to the effects of conflict on GDP per capita growth: the transition to steady state. Little, or nothing, has been written on the effect of conflict in one country on other economic development enhancing variables, especially key variables of the neoclassical growth model, a framework which has been widely used in the conflict and development study literature. This study adds to this pool of knowledge by extending the model to include the effects of neighbours' conflict on other economic development determinant variables.

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[1] Globalization is however not a recent phenomenon in the world as it dates back to the 19th century but it is increasingly discussed in recent times.

As one of the pioneering studies (Murdoch and Sandler 2002a) on the spill over effects of conflict also observed, a better understanding of the consequences of civil wars, not only on a host country's economic growth but also on its neighbour's growth, is essential to improve the effectiveness of foreign assistance to developing countries. The focus of chapter 5 is on own-country effects of conflict, and now, I want to scrutinise the spill over effects from conflict in neighbouring countries. This study is similar in many ways[2] to its predecessors, Murdoch and Sandler (2002a, 2002b), but it has employed different measures of neighbouring countries conflict to see if similar results of neighbourhood effects of conflict will be obtained. Different sources of data have been used. Specifically, I want to ascertain whether conflict in one country is a potential shift parameter in the growth equation in another country, but also if this shifts other growth enhancing parameters. Therefore, my interest in this chapter goes beyond estimating the empirical relationship between standard determinants of growth. It is also important to observe the effect of a neighbour's conflict when the country itself is in conflict, an aspect which previous studies did not take into consideration.

The arrangement of the remainder of this chapter will now be outlined. Sub-section 7.1 discusses the possible spill over effects of conflict drawing, on economic theory and previous theoretical and quantitative studies. It is followed by a section which describes the data for the study. Sub-section 7.3 offers a brief description of key variables used in this chapter. The methodology employed is then explained in sub section 7.4. However, less of the theoretical framework (the Solow growth model) is discussed since this model has been discussed in chapter 2. Sub section 7.5 shows the results and discussion of the estimation and 7.6 concludes the chapter.

7.1 SPILL OVER EFFECTS OF CONFLICT: Existing research and stylised facts:

Studies that have used economic theory to explain the incidence of conflict are abundant[3]. These studies have divided economic theories of conflict in two generations. First generation theories emphasized the impact of economic modernization (rapid growth rates and structural changes to the economy) on the mobilization of social groups for conflict. Rapid socio-

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[2] Using the same theoretical model (the neoclassical framework of Solow (1957) and regressing on growth rate for example

[3] For a comprehensive report on this, see Sambanis (2002); for a very recent review of literature on conflict and economic growth. Also see 'economic motives and economic effects of civil war' in appendix 2 of World Bank (2003) on 'A Selected bibliography of Studies of Civil War and Rebellion'.

economic change could accelerate and intensify group competition for scarce resources. Further, the process of modernization explains not only the origins of ethnic conflict but also the form of that conflict, and the success or failure of specific ethnic political movements (Newman 1991).

The second generation of economic theories, however, is more easily generalizable and is based on rational choice theory and economic theories of criminal behaviour. Classic references include Grossman (1995) and Hirschleifer (1995), who focus on the economic tradeoffs that allow the outbreak of conflict and, they also zoom in on the consequences of conflict on economic growth. The influential works of Collier and Hoeffler (1998, 2000, and 2002) on conflict and economic growth fall comfortably within this framework.

The economic studies of civil war have successfully identified an empirically robust relationship between poverty, slow growth, and an increased likelihood of civil war onset and prevalence. These relationships are discussed at length in a collection of papers in the February 2002 special issue of the *Journal of Conflict Resolution* (Collier and Sambanis 2002). Collier and Hoeffler (2000) and Fearon and Laitin (2001) both find evidence that high poverty levels and slow economic growth are the two most salient determinants of insurgency. However, this current study posits that most of the previous works have been focused on the effects of conflict on the countries in conflict[4] themselves, whereas the externality of such conflicts have not received much attention.

It is unlikely that the economic consequences of civil wars will be confined solely to a nation in turmoil. Negative spill over to neighbouring nations are likely to occur from disruptions to trade, heightened risk perceptions by would-be investors, severance of input supply lines, collateral damage from nearby battles, and resources spent to assist refugees (Murdoch and Sandler 2002a). In addition to the negative externality of neighbourhood conflicts effect which has received wide consensus in the limited literature, this chapter also discusses the possible positive spill over effects of conflict to neighbouring countries[5]. First, however, let

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[4] As evident in the issue 01 volume 46 of the *Journal of Conflict Resolution* and several other studies.
[5] A conflict is said to generate negative effects if it directly reduces economic growth and or indirectly reduces the growth of economic growth enhancing variables. It is positive if neighbouring countries gain in some ways as a result of the conflict. An example of the latter can be when resources exploited in the warring country (especially by rebel groups) are sold in the neighbouring country.

me provide some theoretical discussion of how conflict in host countries might affect growth in neighbouring countries in the context of a neoclassical growth model.

A violent civil conflict constitutes a negative externality because it not only disrupts economic interactions in the own, but also in the neighbouring country (Eberle *et al* 2003). The most commonly cited manner in which a conflict in one country affects another is through the possibility of conflict initiation across the border. In some situations war in one country directly increases the risk of war in neighbouring countries (Gleditsch 2002, 2003; World Bank 2003[6]). In a sensitivity analysis, Hegre and Sambanis (2002) find that the positive impact of neighbouring conflict on the risk of civil war remains robust under many possible measures and model specifications[7]. As Eberle *et al* (2003) also noted a large body of research[8] has shown that geographical contiguity increases the likelihood of conflictual interactions between states[9]. Again, Collier and Hoeffler (2001) find evidence that rebellions are contagious, in other words, a rebellion significantly increases the risk of internal upheaval in a neighbouring country. Additionally, they showed that the level of military expenditure in one country is strongly influenced by the expenditure of its neighbours (Collier and Hoeffler 2002). This may be partly due to a perceived threat, and in part because of norm setting and the emulation and rivalries of military leaderships. An increase in military expenditure echoes the diversion effects of conflict discussed in chapter 5.

The literature on the effects of conflict in one country, and on the probability of conflict on another, is well developed. Much of this research suggests that higher economic interdependence between states decreases the likelihood of interstate war (Gleditsch 2003). Actors in more integrated and complex economies face greater costs under conflict, and therefore, have greater interests in maintaining peaceful relations. This means that there is a dual relationship between trade and conflict across borders. Good trading partners increase the

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[6] See Chapter 3 of World Bank (2003) report
[7] As cited in Gleditsch (2003).
[8] See Siverson and Starr (1999); Tir and Diehl (2002). cited in Eberle *et al* (2003).
[9] The civil wars in the African Great Lakes region are examples of this, as recurrent wars in Burundi and Rwanda spilled over their borders in both directions and into the Democratic Republic of Congo. The latter war also provoked interventions by Uganda and Zimbabwe. In all these wars Hutu-Tutsi antagonism was predominant (Ngaruko and Nkurunziza 2002; Prunier 1995). This recurrent ethnic conflict crossed borders and lasted over time, being at the core of approximately seven episodes of civil war in the two countries. Additionally, the conflict in Sierra Leone is said to have been a spill over from the Liberia conflict and in the late 90s, both conflicts were also said to have spilled over to neighbouring Guinea.

opportunity cost of war spill over and war spill over reduce trade. The theory, which has been successfully applied to explain interstate relations, maintains that the costs of war increase with the level of economic interdependence (Russett and Oneal 2001). In this perspective, foreign economic liberalization should have positive international repercussions because the benefits of trade openness easily spill over to neighbouring countries. As most standard textbooks in international economics explain, a unilateral move towards a free trade regime benefits the own, but also the neighbouring countries. The growing income in both states should decrease the risk of civil war and its diffusion to other states (Eberle *et al*, 2003).

Although the basic assertion that conflict in a neighbouring state increases the risk of conflict in a country is not controversial, there are a number of ambiguities associated with the existing empirical evidence. A consensus on how conflict is directly spread to neighbouring countries does not seem evident in the literature (Gleditsch, 2003; Sambanis, 2003). The increase in risk may stem from direct contagion, or what we can call non-actor specific spill over effects. For example, an ongoing conflict in neighbouring countries may decrease the price of arms and increase their availability, thereby making it relatively less expensive for aggrieved groups to mobilize insurgencies (Collier and Hoeffler 2002). So, then, the question remains whether rebel groups in one country directly invade neighbouring countries, or whether rebel groups in countries close to those that are in conflict emerge as a results of neighbour's conflict. I will argue that most often it is a combination of the two factors.

Apart from increasing the probability of conflict, the most immediate effect of civil war on neighbouring countries is the arrival of thousands of refugees in the neighbouring countries and the consequences of this move for the population thereafter. Further, since refugees stay in asylum countries long after the civil war ends, the social effects of civil war on neighbouring countries also continue well into peace time (World Bank 2003). Indeed, nearby civil wars can increase refugee flows[10], a factor which raises labour growth and reduces per capita income through migration (Murdoch and Sandler 2002a).

Among all the long-term, indirect effects of civil war, it causes the most deaths in neighbouring populations through infectious diseases, especially malaria. Many people have been known to die from malaria in Africa, especially. It is now established that civil war has

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[10] See chapter 3 for a review of literature on the effects of refugees on host country economy.

been a basic reason behind the observed increase in the frequency of malaria (World Bank 2003). Montalvo and Reynal-Querol's (2002) study discovered that conflict in one country affects the occurrence of malaria in a neighbouring country directly as non-immune refugees come into contact with infected individuals when, in instances where the former flee through rural and rainforest areas to reach a foreign country. Even more alarming is Ghobarah *et al* Russett's (2003) discovery that the most important effect of civil war on neighbouring countries is caused by HIV/AIDS[11], a dreadful disease known to have claimed thousands of lives especially in Africa.

Again, the effect of conflict in one country on the trade link of another can be enormous. War seems to frighten investors away rather than attract them to a particular region[12]. It is not only investors who are scared away from these regions, even inter state trade reduces during conflicts. This is exacerbated by the dependence of some African countries, for example, on others for a major part of their trade (imports and exports), a case which applies especially to countries that do not have access to the sea (land locked countries). A country whose import and export is carried out by another country in conflict is at a greater risk especially if there are either no other options, or such other options are more expensive. The war in Mozambique doubled Malawi's international transport costs and triggered an economic decline. Similarly, the war in the Democratic Republic of Congo closed the river route to the sea for the landlocked Central African Republic (World Bank 2003).

Sometimes, the spill over effects of conflict can be physical; bombs have been known to cause destructions beyond the borders in which they are used. These might destroy valuable physical capitals, schools, and so forth in neighbouring countries. A nearby civil war may lead to collateral damage from battles close to the border which destroy infrastructure and capital (Murdoch and Sandler 2002a). Further, the displacement of people within border regions is also not uncommon in countries that share borders with conflict-ridden countries. This might exert pressure on urban population as the attraction is normally towards the bigger cities.

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[11] HIV/AIDS is a wide spread disease in times of conflict because the incidence of rape increase during these situations. Some time the transmission of Aids is intentional on the parts of rebels, as shown in the case of Rwanda.
[12] A special exception in this case relates, however, to investors involved with the trade in arms, who are, in fact, attracted.

Another important externality which results from conflict in contiguous countries is the reallocation of resources to less productive activities. This has already been deliberated on in chapter 5 in my discussion on the effects of conflict on the host country; it is also very relevant in the spill over effect debate. Being contiguous to a warring country might require the taking of military measures to ensure the protection of borders. This action, because of its high expense, in most cases constitutes a diversion of resources away from possibly development oriented initiatives, and therefore leads to loss. This loss is twofold: the direct cost of diversion but also the side effects produced by this border security. Border patrols, or shooting to scare neighbouring countries' troops, create panic while sending signals of potential conflict spill over. The defence cost of countries with neighbours in conflict is expected to increase as border defence is strengthened.

On the part of positive spill over, gains from disruption in one country's economic activities as a result of conflict may accrue to neighbouring countries. Because war disrupts trade and other economic activities in neighbouring countries, it is expected that the opportunity costs for resorting to war should decrease. However, some countries have even been known to interfere in their neighbours' conflict situations. Countries embroiled in civil war also often provide a safe haven for rebel groups of other countries. The wars in Liberia and Sierra Leone alternately served these purposes for each other's rebel groups (Davies and Fofana 2002). This suggests that there may be gains accruing to some countries, hence their willing involvement in other's conflicts. This clearly excludes those countries that send in support usually in the form of military personnel in peace missions[13].

A number of proxies possibly trigger economically motivated violence. These proxies are a high share of primary products exports in the GDP, seen as creating opportunities for looting; the proportion of young men in society, seen as creating a pool of potential rebels who will be attracted by the prospects of economic gain; and thirdly, very few years spent in education, seen as likely to reduce the economic alternative to involvement in conflict (Collier 2000). All of these factors that are likely to produce economically motivated violence could also influence the involvement of a neighbouring country in conflict in other countries. Spoils of war from one country, especially when these are primary products, could be sold in

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[13] For example, the Nigerian and Guinean troops that dominated the ECOMOG peace mission to Sierra Leone in the 90s clearly did not bring direct gains to these countries, although undocumented sources have it that soldiers were involved in looting and extortions. These cannot be quantified.

neighbouring countries with their benefits accruing there. A clear cut example is the sale of Sierra Leonean 'conflict diamonds' (especially when such sales were internationally banned) in neighbouring Liberia and the procurement of arms and munitions by the rebel organization from that same country. Guinea would have gained much through trade when there were sanctions in Sierra Leone towards the end of the 90s because goods were smuggled across the border. The proportion of young and uneducated men in neighbouring countries could also serve as a pool of potential rebels for countries in conflict. The opportunity to gain new recruits should be especially large in poor societies. With low levels of human capital and slow growth, the 'alternative income' to be gained from participating in a rebellion is high (Eberle *et al* 2003). These arguments suggest that there may be positive gains from conflict in one country: idle labour could be absorbed into this process at the same time that direct financial benefits are accessed. So there is a reciprocal relationship between peaceful countries and conflict ridden countries.

The long standing debate with empirical evidence[14] on the capital flight effect of conflict could suggest positive effects of conflict on neighbouring countries. There is no study, to my knowledge, on where capital typically flies to[15]. However, if this were to flow into the neighbouring countries, then one would expect positive spill over effects of conflict into neighbouring countries. In as much as this is difficult to quantify, it cannot be completely ruled out. Measuring capital flight and its specific direction is difficult because financial capital is normally illegally taken out of a country. It is often difficult, if not impossible, to move physical capital across borders unlike the mass movement of human capital across borders in times of conflict can be directly observed. Although this is usually seen as negative for host countries, it could be translated into positive effects. In fact, where the human capital of refugees is high, benefits to the host country could be substantial. Experience shows that Gambians saw an influx of teachers from Sierra Leone with the onset of war in the latter country in the 90s. Although this was a common trend prior to the conflict, the magnitude increased significantly because of the conflict.

The spill over cost of conflict is not only confined to two countries (with one country affecting another country), they can also be regional. Regardless of whether conflicts in

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[14] See Colleir (1998) for example

[15] This is so even though capital, especially financial capital, from developing countries is likely to be saved in banks in Western countries where political stability guarantees interest on savings.

developing countries are motivated by grievance and greed by some members of the host country population or fuelled by greed and grievance from other members of the neighbouring country, they have had profound consequences on economic growth, not only at home, but also in neighbours (irrespective of whether they participate[16] in the conflict). Factors such as the diversion of foreign direct investment out of the entire region with conflict harm all countries within that region. The loss spreads to neighbouring countries because experience shows that conflicts in one country can spread into a neighbouring country; with this in mind, investors will be hesitant to engage in business within the entire region.

There is a growing body of research that highlights the association between economic conditions and neighbouring civil conflict. Sambanis (2002) has already provided a detailed review of the cross-country empirical literature on civil war, so I will not attempt to be comprehensive in this section. Instead, I will summarize main findings of recent studies. A frequently cited study that attempts to theorize regional influences in civil war is Lake and Rothschild (1998). To the best of my knowledge, the first empirical evidence of diffusion or contagion effects in civil war is presented in Murdoch and Sandler (2002a and 2002b) who have attempted to estimate the overall effect of a neighbouring conflict on growth. Having a neighbour at war reduces the annual growth rate by around 0.5 percentage points (Murdoch and Sandler 2002a). This study shows that civil war reduces not only the country's own growth rate, but also growth across an entire region. Since most countries have several neighbours, this is a major multiplier effect of the economic cost of conflict. Recalling that the growth cost for the country itself is around 2.2 percent, a country with four neighbours is likely to inflict about as much economic damage on its neighbours during conflict as it does on itself (World Bank 2003). Although the results of the first wave of studies on civil war spill over is impressive, a considerable gap exists between the theory and empirics (Eberle et al 2003). Sambanis (2002, 19) rightly pointed out, in a recent survey article, that "we do not yet know how civil violence is transmitted across borders". This is why the current study probes the effects of conflict in one country not only on the per capita GDP growth but also on some development enhancing variables to get a broader view on the several economic development determinants that a neighbours' conflict might affect. Three main questions are empirically tested here. How does a neighbouring country's conflict directly affect a country's economic

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[16] Participation in conflict of a neighbouring country could take the form of help either to the government or the rebels. The latter is normally considered illegal and it is internationally frowned upon.

growth? How does neighbour's conflict indirectly affect economic growth of other countries? Does the number of borders in conflict increase the direct and indirect spill over costs? These questions are answered with the use of panel data analyses in this chapter.

7.2 DATA

This section details the data used to measure the concepts, the model to answer the questions on cross border linkages of conflict, as well as the method used to estimate the model.

To account for conflict, I rely on a new dataset compiled at the International Peace Research Institute Oslo (PRIO), in collaboration with the University of Uppsala. In contrast to the most widely used 'Correlates of War' data set requirement of 1,000 battle related deaths for a civil war, this new database sets a threshold of 25 battle casualties[17]. Eberle *et al* (2003), Miguel (2003), and few others have also used the same dataset in their studies. Most contributors to the existing literature on civil conflict have worked with, or built on, the Correlates of War (COW) database, indicating that it is by far the most frequently used data on civil war. The Gleditsch and Ward (2002) paper relied on the COW war data, with updates from the conflict data compiled at the University of Uppsala which is available for the 1990s and late 1980s.

However, the lack of transparency and the many inconsistencies of the COW database are well known, and have been the subject of a detailed evaluation by Sambanis (2002).[18] Furthermore, the arbitrary 1000 death threshold the COW database and several other databases use to identify a civil war has the danger of excluding conflicts that may be major for smaller countries, including many African countries (Miguel 2003). What is more, the COW dataset is criticized on the basis that the dates for conflicts can become somewhat arbitrary, as wars with lower intensity may drop in and out the sample depending on whether they claim one thousand casualties in any given year (Gleditsch 2002)

However, as already argued, the data sets commonly used by previous authors include conflicts with 1,000 battle related deaths and not minor and intermediate conflict which might equally negatively affect economic growth. This is one of the extensions of the current study. The database used in this study is said to be more transparent in its construction than COW,

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[17] In this report, armed conflict is divided into three subsets, as explained in chapter 1.
[18] For instance, it is unclear if the Correlates of War database uses 1000 cumulative deaths, or 1000 per year, when identifying a civil war. (Miguel 2003)

and also, it uniquely, records all conflicts with a threshold of 25 battle deaths per year, in addition to classifying conflicts by the standard 1000 death threshold, thus including more small conflicts in the analysis (Miguel 2003). However, the dataset used here also has limitations: it neither includes conflict information by month within each year, nor does it provide the exact number of conflict deaths, and this necessity limits certain aspects of the empirical analysis.

Data on conflict in adjacent countries variable (the key variable for this chapter) is on the existence (a dummy variable with the value 1 if there is conflict and zero otherwise) and duration (measured in years) of the neighbour's conflict. Another interesting variable to include could be the intensity of conflict proxied by the number of deaths as done by Murdoch and Sandier (2002), something which is not available in the chosen dataset. This remains a topic for future research. The variable of a country's neighbour in conflict is then added to the associated empirical model leaving out the conflict variable on the host country since this is already treated in chapter 5[19].

7.3 VARIABLES

In table 7.0, I display the variables' names, coding, source of data and brief descriptions as shown in subsequent tables of the empirical results[20]. The benchmark model shown in the next subsection contains variables that are important for the analysis of the Solow growth model (transitional dynamics) framework and the effects of having neighbours in conflict. I will briefly describe some of these variables below.

The principal measure of current economic conditions in this study is the annual growth rate of per capita GDP. This is largely because of its near universal availability rather than due to overarching theoretical considerations. Many researchers find that a state's level of development alters the prospects for civil war (Collier et al. 2003; Collier and Hoeffler 1998). Consequently, the growth rate of GDP and the initial condition (testing the convergence hypothesis) are used in all specifications. These variables and how they are calculated have already been discussed in chapter 4.

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[19] A specification meant to capture both effects is, however, estimated to see if spill over effects are still observed while looking at own country effects.
[20] Also see table 7.1 for a descriptive statistics on the variables.

The population of the countries is also included to capture two effects. Firstly, countries with larger population are more likely to contain some group willing to rebel, and, secondly, such countries are more likely to have conflict exceeding the casualty threshold. Therefore, controlling for this variable while observing the neighbours' conflict effect will minimise the variables captured in the error term.

Furthermore, investment in physical and human capital is known across empirical studies to increase per capita GDP growth. These two variables have been included in the bench mark model. Three variables -- illiteracy rate, life expectancy and total years of schooling -- for human capital measure have been used. The better educated the population of a country is, the less pronounced its conflict proneness. People with a high human capital have other options available to them than resorting to arms in times of economic crisis. Therefore, accounting for such effects includes controlling for the sample country's human capital level.

For the conflict variable, I probe two main channels through which neighbouring countries' conflict can be harmful. One is the *existence* of conflict, and the other is the *duration* of a neighbour's conflict (measured in years). The existence of conflict variable includes three dummy variables for minor, intermediate conflict and war. The dummy variable assigns a value 1 if a country's neighbour/s experience conflict and 0 otherwise. This is done for all three types of conflict during the sample period 1990 to 2000. A country's neighbour's conflict is then calculated through attention to the share of borders in conflict in relation to the country's total number of borders for every year. This is calculated as:

$$\text{Share of borders in conflict} = \frac{\text{Number of borders in conflict}_t}{\text{Total number of borders}}$$

This calculation is done separately for the three types of conflict for 72 countries for a 10 year period. Note that the total number of borders does not have a time subscript because this does not change over time, even though it changes over observations. The final variable used is the average share of borders in conflict between 1990 and 1995 for the first period, and 1996 to 2000 for the second period. This coding necessitated the use of the duration of conflict variable which considers the cumulative effect of neighbours being in conflict. Countries' share of borders in conflict averaged in two time periods does not indicate the length of time neighbours are in conflict. Certainly, if a country is affected by its neighbours' conflict an accumulated effect would be expected over the years. In other words, the longer these

neighbours engage in conflict, the greater the effect. Hence, the duration variable looks at the total years a country's neighbour(s) is/are in conflict for the 5 years for each of the borders it has and aggregates this for the country as the total number of years of neighbours' conflict. Conflict in adjacent countries is measured in absolute terms as the number of adjacent countries at war. For example, this variable ranges from 0 to 6 for a country with one border which experienced conflict in any year between 1989 and 1994. In addition, the total number of neighbours in conflict will also indicate the magnitude of effect since having more borders in conflict is expected to indicate more effects than having just one. This is highly conditional on the intensity of conflict in the neighbourhood. In addition, the conflict variables of the countries in the sample have also been used in alternative specifications since not controlling for an observation's (country in the sample) conflict might exaggerate the neighbourhood effect.

7.4 METHODOLOGY

The theoretical representation in this chapter is the neoclassical growth model as stated in chapter 2 following the works of MRW (1992) and Murdoch and Sandler (2002a, 2002b). However, this chapter slightly modifies the Solow model to include neighbouring conflict effects. The neighbouring effect of conflict is investigated on the neoclassical transition model and not on the steady state[21] like Murdoch and Sandler because I equally want to see what the effects of conflict on neighbours are while the other traditional determinants of economic growth vary. A two wave panel is set up to observe the short term effects of conflict in the vicinity on economic growth. The division of the entire period into five-year intervals limits the longevity of the conflict in the sample period but it is also very useful to observe the effects of short-lived conflicts. The single cross section method is, hence, not appropriate for analysis in this chapter since the decade or more averaging of the conflict in neighbours might under-estimate the effect especially if the occurrence of conflict is clustered around the beginning or the end of the decade period. This makes panel data analysis more desirable for the analysis in this chapter. In addition, there may be country specific unobserved factors which can be taken into account by the fixed effects model. Another advantage here of using the fixed effect model of Panel data in addition to increasing the number of observation relates to the expectation that including country specific unobserved factors often associated with conflict will produce better results. For example, countries which are mountainous or have

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[21] Steady state equilibrium is reached when key variables maintain their value from one period to the next.

more natural resources can attract conflict which could neither be modelled with the use of single cross section nor with pooled cross section. In addition, the spill over effects of conflict are more likely to be immediate (hence the choice on shorter periods) even though there may be long run effects.

Most quantitative studies of civil war utilize panel data. However, much of the potentially useful explanatory power of panel estimators is lost due to the fact that many important explanatory variables are time-invariant (Sambanis 2002). This concern is shared in this study, and offers the motivation for why this study, in using the panel data analysis also estimates some specifications only with the random effect model. This allows for the inclusion of some pertinent independent variables especially regional dummies which cannot be analyzed in the fixed effect model framework. These two estimation techniques complement each other, and are both suitable for the increase in number of observations they provide.

7.4.2 Empirical Specification

In this chapter, the benchmark empirical specification is:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \varepsilon \ldots \ldots \ldots \ldots \ldots \ldots (1)$$

Where:

Y = GDP per capital growth 1990-1995, 1996-2000

X_1 = LogGDP per capital: the natural log of initial GDP per capita

X_2 = popgr (population growth rate between 1990-95; 1996-2000)

X_3 = Investment (physical capital accumulation)

X_4 = Illiteracy (measure of human capital)

X_5 = Nmincon (neighbouring countries in minor conflict)

X_6 = Nintcon (neighbouring countries in intermediate conflict)

X_7 = Nwar (neighbouring countries in war)

ε = error term

α, βi = parameters to be estimated

Model (1) facilitates an assessment of the transition to a steady state. It is a panel data analysis unlike Murdoch and Sandler (2002a, 2002b) who used a cross sectional regression[22]. The

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[22] I particularly limit these analyses on panel data because I want to observe the short run effects of neighbour's conflict.

dependent variable is the growth in income per capita from two initial periods 1990 and 1996 until the steady state 1995 and 2000. A negative coefficient on the conflict in this model suggests that the growth rate to steady state is reduced as a result of conflict in a neighbouring country.

7.5 EMPIRICAL RESULTS

There are two parts of the empirical results. Bivariate regressions have been estimated to look at the indirect effect of neighbours' conflict on economic growth. Further, the short term effects of neighbour's conflict on developing countries transition growth rates results are shown in the section that follows results of the bivariate regression.

7.5.1 Bivariate regression on the indirect effects of conflict on neighbouring countries' economic growth.

Neighbouring countries must usually accommodate large numbers of refugees, because the victims of war do not usually have the means to travel to countries further away from their home country, and, in any case, they most often arrive on foot. This signals the direct effect of conflict on neighbouring states, the subject of discussion in chapter 5. This direct burden, though the most widely cited, is probably not the most important regional economic spill over of conflict. Results of simple regression indicate that several indirect channels exist through which neighbouring conflict affects economic growth.

The results presented in this section are estimated using the two wave panel data in a simple regression model. This is done to capture the relationship between having neighbours in conflict and such effects on economic growth enhancing variables. The results in tables 7.3 and 7.4 show the effects of the existence and the duration of conflict in the neighbourhood on different economic determinant variables. These analyses are analogous to what is done in table 5.1 which observes the effects of own conflict on growth enhancing variables. However, in this case, results are only shown for two types of conflict; minor conflict and war. This is both because results of intermediate conflict do not differ much from those of minor conflict and also because the two conflict variables reported measure lower and higher thresholds of battle related deaths.

Eight stimulants of economic growth have been identified and the effects of having neighbouring countries in minor conflict and at war can be observed. Each of the economic determinant variables are used at a time as dependent variables. The per capita GDP in this case is the average over the 5 year period, and not the initial condition, as has been used in other parts of the study. This is because conflict affects the economic situation in all the years and not only the initial condition. The same applies to illiteracy rates since the reason for using initial condition (endogeneity) is not expected to show up in this case. The life expectancy variable is the measure of life expectancy at the end of each period (1995 and 1999[23]).

Table 7.3 Effects of the existence of neighbours conflict on non-income data
(Dependent Variables: Various economic development indicators)

Dependent Variable	Existence of Minor Conflict				Existence of War			
	β	Constant	R^2	No.	β	Constant	R^2	No.
gdpgr	-3.08	0.99	0.07	144	0.68	0.22	0.00	144
	(-3.12)	(3.69)			(0.72)	(0.74)		
gdpav	-2426	22230	0.08	144	-1797	2112	0.04	144
	(-4.11)	(8.40)			(-3.04)	(7.99)		
popgr	0.77	1.92	0.06	144	0.35	2.01	0.01	144
	(2.63)	(27.00)			(1.70)	(25.82)		
openess	-17.87	68.82	0.02	143	-0.93	65.31	0.00	143
	(-1.42)	(189.02)			(-0.06)	(18.55)		
Loglixp	-0.20	4.05	0.06	143	0.06	3.99	0.01	143
	(-3.00)	(191.25)			(1.01)	(183.04)		
illitav	38.80	29.63	0.18	136	1.22	37.10	0.00	136
	(6.11)	(13.73)			(0.17)	(14.13)		
grcapfom	-4.31	21.44	0.02	141	2.51	20.02	0.01	141
	(-1.94)	(24.88)			(0.65)	(22.68)		
fdi	-2.83	2.61	0.05	141	-0.25	2.07	0.00	141
	(-3.24)	(7.02)			(-0.22)	(5.83)		

Notes: Corrected for standard errors and values of robust t statistics
are shown in parenthesis below the coefficients.
gdpgr the growth rate of real GDP per capita
gdpav-the average of GDP per capita for each period.
popgr-population growth rate
openness-average trade as a percentage of GDP
Loglixp-the log of life expectancy at the end of each period
illitav- the average of the percentage of illiteracy
grcapfom- the average of gross capital formation
fdi- the average of foreign direct investment

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[23] Data on life expectancy in 2000 would have been preferable but this is not available on the WDI 2002. Consequently, 1999 is used as the end period in this case.

This work has stressed that there is less attention on the effect of conflict on neighbouring countries in the literature. It also emphasized the refugee flow effect of conflict as a major spill over effect. In addition to this, the results in table 7.3 indicate that conflict in one country significantly affects the economic development enhancing variables of its neighbours. Specifically, having a neighbour in conflict significantly reduces GDP per capita growth, GDP per capita, life expectancy, domestic investment (gross capital formation) and foreign direct investment. This significantly increases the illiteracy rate of nearby countries. The effect of having a neighbour in conflict also shows a positive and significant relationship on the population growth rate. This effect is also marginally significant in the case of having a neighbour in conflict, which substantiates the fact conflict spill over in the form of refugee flow could possibly have a positive effect on population. The minor conflict variable performs better than the war variable, contrary to expectation. Except in the specific case of the effect on the level of per capita income in neighbouring countries, the results show that war does not affect most of the non-income data in neighbouring countries. Finally, though the goodness of fit of the results is very low due to fewer numbers of variables the interesting findings suggest that conflict spreads its evil arms across borders and that the effect is not only on steady state income (as the next section will show) but also on the growth rate to reach that steady state.

In table 7.4, I examine the effects of the duration of a country's neighbour's conflict on economic development stimulants. This is the sum of years a country's neighbour(s) is/are in conflict[24]. The results show that the longer the neighbours are in a minor conflict, the lower the own GDP growth rate, GDP per capita level, trade, life expectancy, domestic and foreign direct investment. Conversely, the sharing of borders with countries whose minor conflicts last longer increases the own population growth rate and illiteracy rate. All variables are statistically significant, with most of them (6 out of 8) at the 1% level. Contrary to findings in table 7.3, the variable on war shows theory consistent result. Having neighbours with longer years of war significantly reduces a country's GDP per capita growth and its level, trade and investment, both domestic and foreign investment. Longer periods of war also increase population growth and, although not significant, this variable shows the expected direction of effect on illiteracy rate. These results seem to suggest that it is the duration of war rather than its mere existence that poses more problems for neighbouring countries. However, the results

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[24] Looking at the summary statistics on table 7.1, on average, conflicts in neighbouring countries last up to 2, 3 and 2 for minor and intermediate conflicts and war with a maximum of 12, 10 and 16 years each.

on the duration of minor conflict still show stronger impact on neighbours' economic determinant variables. Although the goodness of fit is generally low, longer periods of minor conflict seem to explain significant parts of the variation of human capital variables (life expectancy) in other countries. Table 7.8 gives a summary statistics of the different types of conflict in each time period. There are significantly more minor conflicts in each period than war.

Table 7.4 Indirect Effects of the duration of conflict in a neighbouring country on economic growth

Dependent Variable	Duration of Minor Conflict (1)				Duration of War (2)			
	β	Constant	R^2	No.	β	Constant	R^2	No.
gdpgr	-0.18 (-1.95)	0.69 (2.50)	0.03	144	-0.12 (-1.82)	0.70 (2.37)	0.03	144
gdpav	-253 (-5.16)	2197 (9.02)	0.09	144	-117 (-3.42)	2052 (8.38)	0.04	144
popgr	0.08 (3.76)	1.9 (30.30)	0.07	144	0.04 (2.80)	1.97 (26.39)	0.04	144
openess	-3.01 (-3.43)	70.71 (22.51)	0.07	143	-1.04 (-1.54)	67.99 (23.73)	0.02	143
loglixp	-0.02 (-3.35)	4.05 (198.57)	0.06	143	-0.004 (-0.97)	4.02 (196.12)	0.01	143
illitav	4.29 (6.76)	29.50 (14.03)	0.22	136	0.44 (1.02)	36.13 (14.79)	0.01	136
grcapfom	-0.41 (-1.76)	21.30 26.40)	0.02	141	-0.31 (-2.11)	21.39 (26.42)	0.02	141
fdi	-0.30 (-3.89)	2.57 (7.32)	0.06	141	-0.12 (-1.97)	2.34 (7.28)	0.02	141

Notes: Corrected for standard errors and values of robust t statistics
are shown in parenthesis below the coefficients.
Please see notes under table 7.3 for the definition of variables.

Finally, table 7.5 presents results on the general prevalence of conflict (any type of conflict) in neighbouring countries and its spill over effects. This table simply ignores the classification of conflict and treats minor, intermediate conflict and war as the same. So any border in conflict (dummy variable) and total borders (continuous variable) in conflict[25] refer to any type of conflict. The results are unsurprising. The total number of borders[26] in conflict matter more for economic development in a neighbouring country than having just one neighbouring

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[25] See chapter 3 for the description of these two variables.
[26] I use the sum of total number of borders in conflict and not the share of total borders in conflict because countries with fewer borders, (say 2) which are all in conflict, will show a higher share of borders in conflict where as a country with 5 borders with 4 of those in conflict, will show a lower share of borders in conflict. I, therefore, decided to use the sum total number of borders a country has in conflict.

country in conflict. For all the economic growth enhancing indicators in table 7.5, the total number of borders in conflict show higher t-values than the 'any border in conflict' variable. The results confirm the hypothesis that the more borders in conflict the greater the impact felt by the country, one of the main questions this chapter seeks to answer.

Table 7.5: Indirect effects of general conflict in neighbouring countries on economic growth

Dependent Variable	Any border in Conflict				Total Borders in Conflict			
	β	Constant	R^2	No.	β	Constant	R^2	No.
Gdpgr	-0.37 (-0.79)	0.64 (1.70)	0.00	144	-0.29 (-1.56)	0.82 (2.34)	0.02	144
Gdpav	-1271 (-2.52)	2674 (5.62)	0.07	144	-439 (-3.41)	2424 (7.36)	0.08	144
Popgr	0.17 (1.27)	1.95 (16.99)	0.01	144	0.09 (2.02)	1.96 (22.60)	0.02	144
openness	-16.00 (-2.80)	76.97 (15.40)	0.06	143	-6.65 (-4.31)	75.62 (20.35)	0.09	140
Loglixp	0.001 (0.03)	4.01 (127.12)	0.00	143	-0.01 (-0.83)	4.03 (159.35)	0.00	143
Illitav	11.71 (2.99)	28.66 (8.95)	0.05	136	3.9 (3.08)	31.21 (12.03)	0.05	136
Grcapfom	-0.31 (-0.21)	20.78 (15.97)	0.00	141	-0.70 (-1.47)	21.64 (20.94)	0.04	140
Fdi	-1.23 (-1.69)	2.93 (4.23)	0.03	141	-0.48 (-2.82)	2.78 (5.99)	0.05	140

Notes: Corrected for standard errors and values of robust t statistics
are shown in parenthesis below the coefficients.
See notes under table 7.3 for variable description

The effect of neighbours' conflict on the determinants of economic development in other countries is striking. Having even one neighbour in conflict (indirectly) negatively affects economic growth. The existence of one neighbouring country in conflict reduces per capita GDP, trade and foreign direct investment. On the total number of borders in conflict, GDP growth rate, per capita GDP, trade, domestic and foreign investment are decreasing indicating a higher indirect effect of neighbour's conflict on economic growth. This implies that all countries that have many borders in conflict must be suffering much economic depression. Table 7.10 has been created for illustrative purposes indicating countries and their number of borders and the total of those borders in conflict[27]. Sub-Saharan Africa has more countries

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[27]A selection of countries with an above average number of borders, (about 4 in this study) and more than 3 borders in conflict is made across regions.

with the majority of borders in conflict. It does not, however, mean that all countries with many borders are necessarily in trouble, only those with many borders in conflict. For example there are only 3 countries in conflict out of Zambia's 8 borders. Congo D.R, Congo, Ethiopia, Rwanda and Uganda are expected to suffer most since these countries are in conflict themselves and have most of their neighbours in conflict as well. The case of Guinea could also be made at this point. Although it is not in conflict, 5 out of its 6 neighbours were in conflict during the time of study.

The magnitude of the coefficient on total borders in conflict variable on the trade and illiteracy rate calls for concern from all interested in the economic growth of developing countries. The proposition that more outward-oriented economies tend to grow faster has been tested extensively in the literature and the majority of the evidence tends to support this proposition. Conflict is seen to greatly hinder trade in the home country -- table 5.1 in chapter 5 -- and trade on neighbouring countries. Further, theoretical growth models (especially the endogenous growth model) predict that trade openness could positively influence economic growth, because the flow of goods and investment across borders through international trade could be an effective means for diffusion of knowledge at the international level (Elbadawi, 2001). Since knowledge generates positive externalities in these models, the result of expanded trade should be to expand the productive capacity of the economy (Edwards, 1992). However, according to the authors, the real bone of contention does not seem to be the issue of openness per se, but the type of openness [28] that is most efficient for the transfer of knowledge and technology. Given that having a neighbouring country in conflict also affects your gross foreign direct investment, conflict is a serious problem hindering growth in developing countries, especially sub-Saharan Africa.

The extent of trade is, in this sense, a good observable indicator of integration, and it has the advantage that data are relatively easy to obtain. An individual country may have a high degree of trade integration with countries elsewhere in the world, but it is its relationships with neighbouring states that most affect its security. Hence, the extent of economic linkages with proximate states (South to South trade) seems a more appropriate indicator of the costs of violent conflict and incentives for settling conflicts in non-violent ways. However, since this

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[28] For example, it is argued that only particular kinds of imports --mostly services such as foreign direct investment (FDI) and intellectual property – and not regular goods imports, are expected to have significant productivity-enhancing effects.

latter variable is hard to come by, the trade with all other countries could be used as a suitable proxy because trade links to the wider world could be affected if neighbours are in conflict even if there is no direct trading with them. Evidently, countries are not just interested in their own peaceful state or fear of direct conflict spill over but also in the peaceful state of neighbours whether or not they have direct trade links. The rest of the results now look at the direct short term effects of conflict on economic growth.

7.5.2 Results of Panel data analysis on short term direct effects of neighbours' conflict on economic growth.

In table 7.6 estimates from different specifications of the panel version of model (2) are presented. Here growth is considered over two shorter time periods and then pooled with a panel estimator of RE and FE. In this case, results of fixed effects are discussed since the Hausman's test indicates that FE is to be preferred. The dependent variable is GDP per capita growth rate and the benchmark model shown in column 1 of table 7.6 includes the natural logarithm of per capita GDP, population growth, investment (gross capital formation) and human capital variable-illiteracy (initial values)[29]. I add to the specification variables of interest in a stepwise fashion, starting with the impact of each type of conflict a neighbouring country has (for the existence specifications- columns 2 to 4), and a specification with the joint effect of all types of conflict (column 5) and a full model including the own and neighbouring country conflict situation (column 6) with column 7 estimating a specification on neighbouring conflict effects regardless of the type of conflict. Finally, column 8 probes regional effects. This same procedure is followed for estimates in table 7.7 where the duration of conflict variables is used in lieu of the existence of conflict variable.

In column one, the benchmark model for the panel data framework used in this chapter is estimated. These results correspond closely with the Solow growth model used as a framework in this study. The initial level of GDP per capita creates a negative influence on income growth, known as convergence, owing to diminishing return of capital accumulation. What is more, physical capital increases growth whereas high illiteracy levels reduce growth even though population growth is contrary to the speculations of this model probably because of the short time period used in this study. Reverse causality between population and economic growth (common in panel data results because of shorter time periods) might be

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[29] Life expectancy and total years of schooling are used alternatively. However, the illiteracy rate variable produced better results.

influencing the outcome of these results. Reverse causality is observed when high growth attracts higher net immigration and lowers mortality, both of which increases the population growth rate; these are elements that will positively relate to economic growth. The significant levels of the initial per capita income with its right sign (confirming the convergence hypothesis) should, nonetheless, be interpreted with caution since business cycle effects might be influencing these results.

In the second column, the sole effect of having neighbours in minor conflict is observed. The results show that a country's neighbour in minor conflict reduces growth by a 2.2 percentage point while taking country specific unobserved variables into account. In column 3, the results show that intermediate conflict neighbourhood effects are marginally larger than minor conflict and significant. A country loses about 2.3 percentage point in per capita GDP growth if there is intermediate conflict in its neighbouring countries. The results on the neighbouring countries war variable are counter intuitive. This is even so when all the three variables of neighbours conflict are simultaneously used in the specification in column 5. Since the variable is insignificant, no explanation can be given for such results. Intermediate conflict in a neighbouring country again, as expected, exerts slightly more pressure on economic growth than minor conflict -- both variables being significant at the 5% level (column 5).

In column 6, the combined effect of a country and its neighbours all being in conflict is shown. The results indicate that a country's war harms its growth more than all other types of conflict, but also that its neighbour's minor conflict is more harmful, followed by intermediate conflict. A potential problem in estimating the effect of neighbourhood effect of conflict is observing this effect while own country itself is in conflict. As Gleditsch (2003) noted, the presence of geographical contagion or neighbourhood effects create problems for statistical analysis. If the risk of conflict in one state depends on the presence of conflict in others, then the observations for different countries can no longer be considered independent of one another (see Gleditsch 2002a; Gleditsch and Ward 2000). The risk of conflict cannot increase for one state i without, at the same time, increasing the risk of conflict in neighbouring countries j. This spatial dependence between observations makes it difficult to get consistent estimates from a conventional statistical model, which assumes that observations are

independent of one another.[30] Similar effects might militate against the results in column 6. Although results of this study do not predict probability of conflict in neighbouring country, nevertheless, if own country conflict reduces growth (confirmed by results in chapter 5), it will be difficult to see how neighbouring countries conflict also reduces growth. The low correlation (table 7.2) between these two events makes it possible to use both variables in the same specification, but this does not imply that the two events are not related. Column 7 estimates a specification with a country that has any of its borders in conflict but the variable is not significant.

In column 8, specifications with regional and period dummies have been estimated with only the Random effects models since the Fixed effect model could not be used at this point. The specification in column 8 indicates that African countries' growth rate significantly reduces when we control for conflict neighbourhood effects. These results are consistent even in a specification where Africa and Asia are used while dropping Latin America. This is probably because a major locus for civil wars in recent years has been Sub-Saharan Africa, where twenty-nine of forty-three countries suffered from civil conflict during the 1980s and 1990s (Miguel 2003). Sambanis (2002) also noted that the region most affected by civil violence is Sub-Saharan Africa, with Asia (especially South-east Asia) and the Middle East (including North Africa) following at some distance. Murdoch and Sandler (2002b) also discovered, in their regional comparison, study that Africa displays a greater ability than the worldwide sample to recover from a civil war owing to convergence, schooling and other factors. The results in column 8 are consistent with these findings since the coefficient on initial per capita GDP (controlling for regional dummies) showed a negative and significant effect on growth confirming the convergence hypothesis. The period dummy does not indicate the concentration of effects of the existence of neighbourhood conflict effect on GDP growth in any period since it is not significant.

Moreover, interaction terms between regional dummies and neighbour's conflict were created and estimated to test which of the regions suffer most in terms of conflict neighbourhood effects[31]. The results contradict the findings of Murdoch and Sandler (2002b) who maintained

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[30]Consistent estimation methods for spatially clustered data that presume a continuous dependent variable, such as Anselin's (1988) spatial autoregressive lag and spatial error model, are not appropriate for categorical dependent variables such as conflict (Gleditsch, 2003).
[31] Results on this estimation are not shown because they are inconclusive on the other socio-economic variable.

that neighbourhood spill over are generally stronger in Asia than in Africa. The African interaction term in this specification is negative and significant (at the 1% level) whereas that for Latin America and Asia (using one at a time), they were simply insignificant. For each specification with a combination of two regions (while always having Africa in the specification), the constant term as the region left out shows an insignificant effect. These differences in the finding might be related to the different types of variables used by the current and previous studies. I have used the number of borders in conflict while Murdoch and Sandler used the distance to capture spatial effects.

Similarly, Gleditsch (2003) used a data set indicating the minimum distances between states to identify regional linkages. He coded two states as connected if they are within 950 km with one another. In his analysis, introducing a term for the number of neighbours did not notably change the results. In this study, the number of border variable is preferred to distance measures, firstly, because the distance measure might just capture the rate at which spill over effects are transmitted but the distance measure might loose importance for proximate states whose share of border length is less than 950 km[32]. Besides, the spatial variable used to capture spill over effects in previous studies does not exactly mention what two parts of a country's distance are being measured. It could be that the distance measure takes the distance between the capital cities of the countries which are most often heavily protected against invasion.

Murdoch and Sandler (2002b) realized that the negative neighbourhood consequences of a civil war on economic growth are stronger than the effects of home country conflict influences for the regions they examined. In this study, even though separate results of the negative consequences of home conflict are not shown in the panel data framework[33] (as these are shown in chapter 5), the neighbourhood effects are negative and significant for minor and intermediate conflict (column 5), but war in the neighbourhood carries the wrong sign and is of no significance.

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[32] Murdoch and Sandler (2002a, 2002b) also used lower thresholds.
[33] A specification in the panel data FE model with the bench mark model plus home country conflict showed that war leads to a loss of about –0.79 percentage point reduction in home per capita GDP growth with a t statistic of –1.40; intermediate conflict showed a negative but insignificant effect while home minor conflict was positive but insignificant.

Table 7.7 produces similar results as in table 7.6. Specifications in columns 2 to 8 in this table are the same as those in table 7.5, the only notable difference relates to the fact that the neighbourhood conflict effects are measured in years (duration), instead of existence. The general results in this table are similar to what is found in table 7.5, meaning that the duration of conflict does not seem to harm economic growth (in the short run) in other countries more than the existence of conflict. This is probably because of the short time period. Five years might also be too short to observe the cumulative effects of neighbour's conflict. Looking at the cumulative effects of neighbours conflict (not in terms of time but total number of borders in conflict) in column 7, the results show that the more borders in conflict a country has, the lower its growth rate. A country looses 0.6 percentage points in growth rate as a result of having more than one border in conflict. In the duration effect, the dummy variable for Africa also shows the significant negative effects of neighbours' duration of conflict (column 8).

Generally, the existence and duration of conflict in neighbouring countries explain about 73 to 79% of growth differences in developing countries in this study. This is particularly so for specifications using the fixed effects model which shows that country specific unobserved effects, are important in determining the neighbourhood effects of conflict in neighbouring countries.

7.6 SOME CONCLUDING REMARKS

This chapter demonstrates that countries in the proximity of conflicts may grow less through no fault of their own. The study finds results that are consistent with theory and previous findings on the effects of neighbours' conflict. In addition, evidence is further provided substantiating the fact that neighbours' conflict directly and indirectly affects economic growth. It is observed that it is the total number of border in conflict rather than just having one border in conflict that hurts neighbours' economic growth both directly and indirectly. It is the duration of war, rather than its existence that indirectly reduces growth enhancing variables in neighbouring countries. On the whole, the study confirms the existence of neighbourhood conflict effects in the short run.

However, numerous extensions can help improve on the present analysis and clarify the transnational dimensions of conflict. Although the analysis here has restricted neighbourhood conflict to countries that share a border with countries in which conflict occurs, it does not

identify the conflict location within a country and proximity of other states to this location. This is an obvious problem for large countries that experience conflict only in certain parts of their territories that might in fact be far away from neighbouring countries. However, many of the expectations are strongly borne out by the empirical results.

The main policy recommendation advanced in this chapter is that because the effects of conflict are felt beyond the borders of the conflicting countries, reconstruction of war torn societies should take this very seriously into account if it plans to be successful.

7.7 APPENDIX TO CHAPTER SEVEN

Table 7.0: Variables, sources of data, coding and brief description

Variable	Code	Definition	Source
Conflict	Hmincon, Hintcon, Hwar	A dummy variable with the value 1 if a country has a minor, intermediate conflict or war and 0 otherwise	States in Armed Conflict report.
Conflict	Hminew Hintnew Hwarnew	The total number of years an 'observed country' has been in conflict	States in Armed Conflict report.
Conflict (Existence)	Nmincon, Nintcon, Nwar	A dummy variable with the value 1 if a country's neighbour has a minor, intermediate conflict or war and 0 otherwise which measures the existence of conflict in a country's neighbours. The share of borders in conflict is then calculated from this variable.	Author's own calculation using the number of borders variable from CIA
Conflict (Duration)	Nminnew Nintnew Nwarnew	The absolute number of years a country's neighbours have been in conflict and an aggregation of the total of borders in conflict for every country.	Author's own calculation
Number of borders	Nobord	The number of borders a country has	CIA

Table 7.1: Descriptive statistics of variables

Variable	Observation	Mean	Standard Dev.	Minimum	Maximum
Gdpgr	144	0.36	2.82	-9.1	7.8
Loggdpin	144	7.61	0.81	6.18	9.36
Gdpini	144	2806	2323	484	11588
popgro	144	2.08	0.74	-1.65	4.81
Grcpfom	143	19.67	8.19	4	53
Illitini	136	38.64	22.72	4	89
Investment	143	19.67	8.20	4	53
Religion	144	0.45	0.26	0	0.86
Language	144	0.51	0.32	0	0.92
Ethnic	144	0.55	0.25	0	0.93
Nminnew	144	1.85	2.52	0	12
Nintnew	144	1.82	2.47	0	10
Nwarnew	144	2.75	3.67	0	16
Hminew	144	0.71	1.35	0	6
Hintnew	144	0.68	1.40	0	6
Hwarnew	144	0.63	1.41	0	6
Nmincon	144	0.21	0.24	0	1
Nintcon	144	0.18	0.23	0	1
Nwar	144	0.21	0.25	0	1
Hmincon	144	0.31	0.47	0	1
Hintcon	144	0.24	0.42	0	1
Hwarcon	144	0.20	0.40	0	1

Nmincon, Nintcon and Nwarcon are dummy variables (existence) for neighbouring conflicts
Hmincon, Hintcon and Hwarcon are dummy variables for home conflicts
Nminew, Nintnew and Nwarnew measure the total number of neighbour's conflict
Hminnew, Hintnew and Hwarnew are continuous variables (years in conflict) for home countries

Table 7.2 : CORRELATION COEFFICIENTS[34]

Variable	Gdpgr	loggdp	popgro	Grcpform	Illiteracy	Nminnew	Nintnew	Nwarnew	Hminew	Hintnew	Hwarnew
Gdpgr	1.00										
loggdp	0.15 (0.07)	1.00									
popgro	-0.03 (0.38)	-0.35* (0.00)	1.00								
Grcpfom	0.19* (0.02)	0.30* (0.00)	-0.23* (0.01)	1.00							
Illitini	-0.14 (0.10)	-0.69* (0.00)	0.40* (0.00)	-0.28* (0.00)	1.00						
Nminnew	-0.16 (0.05)	-0.40* (0.00)	0.27* (0.00)	-0.11 (0.20)	0.49* (0.00)	1.00					
Nintnew	0.04 (0.62)	-0.15 (0.07)	0.00 (0.99)	-0.09 (0.29)	0.02 (0.80)	0.19* (0.02)	1.00				
Nwarnew	-0.16 (0.05)	-0.20* (0.02)	0.19* (0.02)	-0.13 (0.13)	0.08 (0.36)	0.20* (0.02)	0.41* (0.00)	1.00			
Hminew	0.05 (0.56)	-0.13 (0.12)	-0.02 (0.82)	-0.02 (0.82)	0.19* (0.02)	0.08 (0.35)	0.13 (0.13)	-0.03 (0.70)	1.00		
Hintnew	0.09 (0.31)	-0.02 0.77	-0.09 0.31	-0.09 0.31	0.06 0.52	0.01 0.87	0.23* 0.00	-0.00 0.96	0.54* 0.00	1.00	
Hwarnew	0.01 0.92	-0.01 0.94	-0.06 0.37	-0.11 0.17	-0.06 0.50	-0.05 0.58	0.07 0.38	0.04 0.60	0.35* 0.00	0.29* 0.00	1.00

Nmincon, Nintcon and Nwarcon are dummy variables (existence) for neighbouring conflicts

Hmincon, Hintcon and Hwarcon are dummy variables for home conflicts

Nminew, Nintnew and Nwarnew measure the total number of neighbour's conflict

Hminnew, Hintnew and Hwarnew are continuous varables (years in conflict) for home countries.

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[34] The correlation coefficients between the conflict dummy variables for neighbouring countries (Nmincon, Nintcon and Nwarcon) and home countries (Hmincon, Hinticon and Hwarcon) are not shown in this table since it is not quite right to do correlation between continuous variables and dummy variables. But the table also has correlation between home and neighbour's conflict for the continuous conflict variables (Nminnew, Nintnew and Nwar and Hminnew, Hintnew and Hwar).

Table 7.6 Effects of the existence of conflict in a neighbouring country on economic growth
(Dependent variable is growth of per capita GDP 1990-1995 and 1996 to 2000)

Variable	(1)		(2)		(3)		(4)		(5)		(6)		(7)		(8)
	FE	RE	FE	RE	FE	RE	FE	RE	FE	RE	FE	RE	FE	RE	
Constant	119.6	7.30	1120.92	7.38	121.85	8.82	118.10	6.31	122.94	7.40	126.96	6.66	121.86	7.46	10.57
	(12.10)	(1.44)	(12.55)	(1.47)	(12.76)	(1.69)	(11.54)	(1.25)	(12.62)	(1.45)	(12.74)	(1.30)	(12.25)	(1.45)	(2.05)
LogGDP	-15.75	-0.94	-15.94	-0.97	-15.97	-1.10	-15.55	-0.85	-16.14	0.99	-16.61	-0.93	-16.04	-0.97	-1.25
	(-12.25)	(-1.61)	(-12.71)	(-1.68)	(-12.89)	(-1.84)	(-11.66)	(-1.48)	(-12.74)	(-1.69)	(-12.88)	(-1.60)	(-12.40)	(-1.65)	(-2.06)
Popgro	0.55	0.63	0.61	0.69	0.61	0.66	0.53	0.49	0.67	0.57	0.69	0.58	0.58	0.62	0.50
	(2.23)	(2.01)	(2.53)	(2.22)	(2.55)	(2.15)	(2.07)	(1.54)	(2.74)	(1.80)	(2.79)	(1.78)	(2.36)	(1.98)	(1.49)
Investment	0.09	0.04	0.09	0.04	0.09	0.04	0.09	0.04	0.10	0.05	0.09	0.05	0.08	0.04	0.06
	(2.44)	(0.99)	(2.64)	(1.14)	(2.74)	(0.97)	(2.49)	(1.11)	(2.88)	(1.23)	(2.56)	(1.32)	(2.31)	(1.00)	(1.51)
Nmincon			-2.18	-2.03					-2.03	-1.84	-2.25	-1.93			-1.56
			(-2.14)	(-1.68)					(-2.04)	(-1.51)	(-2.20)	(-1.57)			(-1.31)
Nintcon					-2.31	-0.84			-2.19	-0.75	-1.64	-0.92			-1.51
					(-2.47)	(-0.75)			(-2.37)	(-0.66)	(-1.71)	(-0.80)			(-1.31)
Nwar							0.56	2.05	0.01	2.12	0.29	2.14			1.83
							(0.61)	(2.00)	(0.02)	(2.06)	(0.32)	(2.06)			(1.76)
Illitini	-0.05	-0.04	-0.04	-0.04	-0.06	-0.05	-0.06	-0.04	-0.05	-0.04	-0.06	-0.04	-0.04	-0.05	-0.03
	(-1.10)	(-2.06)	(-0.93)	(-1.65)	(-1.35)	(-2.22)	(-1.17)	(-1.93)	(-1.16)	(-1.67)	(-1.30)	(-1.63)	(-0.76)	(-2.11)	(-1.31)
Hmincon											0.46	0.20			
											(1.10)	(0.19)			
Hintcon											-0.56	0.86			
											(-0.87)	(1.20)			
Hwar											-0.88	-0.11			
											(-1.61)	(-0.15)			
Anbdcon													-0.84	0.20	
													(-1.38)	(0.31)	
Africa															-2.48
															(-2.64)
Latin America															-0.74
															(-0.63)
Perriod 1															0.34
															(0.86)
No. of Obs.	135	135	135	135	135	135	135	135	135	135	135	135	135	135	135
F	42.69	8.24	37.00	11.13	38.15	9.69	33.88	12.48	28.84	16.38	21.19	17.07	35.03	8.56	25.06
R within	0.73	0.23	0.75	0.20	0.75	0.27	0.73	0.25	0.77	0.24	0.79	0.23	0.74	0.23	0.26
Hausman χ^2	167.09		183.95		195.68		157.95		189.87		199.43		167.69		
Prop $>\chi^2$	0.000		0.000		0.000		0.000		0.000		0.000		0.00		

Nmincon, Nintcon and Nwarcon are dummy variables (existence) for neighbouring conflicts

Hmincon, Hintcon and Hwarcon are dummy variables for home conflicts; Anbdcon: a dummy variable for having any border in conflict

Table 7.7 Effects of the duration of conflict in a neighbouring country on economic growth
(Dependent variable is growth of per capita GDP 1990-1995 and 1996-2000)

Variable	(2)		(3)		(4)		(5)		(6)		(7)		(8)
	FE	RE	FE	RE	FE	RE	FE	RE	FE	RE	FE	RE	
Constant	119.49	7.05	125.34	6.59	119.67	7.73	10.53	6.54	130.18	7.00	123.32	9.23	10.53
	(11.97)	(1.41)	(12.09)	(1.25)	(12.03)	(1.53)	(2.02)	(1.28)	(12.24)	(1.34)	(12.74)	(1.76)	(2.02)
loggdp	-15.75	-0.93	-16.38	-0.88	-15.77	-0.96	-1.12	-0.87	-17.00	-0.95	-16.17	-1.14	-1.12
	(-12.15)	(-1.62)	(-12.36)	(-1.47)	(-12.18)	(-1.67)	(-1.88)	(-1.50)	(-12.54)	(-1.60)	(-12.89)	(-1.90)	(-1.88)
popgro	0.56	0.66	0.66	0.61	0.52	0.69	0.51	0.71	0.60	0.77	0.63	0.69	0.51
	(2.22)	(2.09)	(2.60)	(1.96)	(2.04)	(2.17)	(1.46)	(2.23)	(2.21)	(2.35)	(2.62)	(2.21)	(1.46)
Grcpfom	0.09	0.04	0.09	0.04	0.09	0.03	0.04	0.04	0.08	0.04	0.09	0.04	0.04
	(2.43)	(1.10)	(2.47)	(1.03)	(2.46)	(0.88)	(1.13)	(1.01)	(2.12)	(1.04)	(2.46)	(0.96)	(1.13)
Nminnew	-0.02	-0.15					-0.17	-0.14	-0.15	-0.15			-0.17
	(-0.18)	(-1.23)					(-1.42)	(-1.18)	(-1.23)	(-1.16)			(-1.42)
Nintnew			-0.19	0.11			0.08	0.15	-0.20	0.12			0.08
			(-1.64)	(0.97)			(0.67)	(1.24)	(-1.55)	(1.03)			(0.67)
Nwarnew					0.04	-0.09	-0.11	-0.12	0.05	-0.11			-0.11
					(0.44)	(-1.26)	(-1.41)	(-1.47)	(0.54)	(-1.39)			(-1.41)
Illitini	-0.05	-0.04	-0.07	-0.04	-0.05	-0.04	-0.03	-0.03	-0.06	-0.04	-0.04	-0.05	-0.03
	(-0.98)	(-1.63)	(-1.51)	(-1.92)	(-1.11)	(-2.12)	(-1.47)	(-1.55)	(-1.18)	(-1.72)	(-0.94)	(-2.11)	(-1.47)
Hminew									0.20	0.13			
									(0.96)	(0.59)			
Hintnew									-0.23	0.18			
									(-1.16)	(0.86)			
Hwarnew									-0.33	0.001			
									(-1.89)	(0.00)			
Totbdcon											-0.55	-0.29	
											(-2.35)	(-1.21)	
Africa							-1.89						-1.89
							(-1.99)						(-1.99)
Latin America							-1.06						-1.06
							(-0.91)						(-0.91)
Per1dum							-0.73						-0.73
							(-1.79)						(-1.79)
No. of Obs	135	135	135	135	135	135	135	135	135	135	135	135	135
R within	0.73	0.19	0.74	0.22	0.73	0.19	0.20	0.14	0.77	0.16	0.75	0.24	0.20
Prop >χ^2	154.52		166.97		168.19		146.40		171.48		177.64		
	0.000		0.000		0.000		0.000		0.000		0.00		

Nminew, Nintnew and Nwarnew measure the total number of neighbour's conflict
Hminnew, Hintnew and Hwarnew are continuous varables (years in conflict) for home countries.
Totbdcon: total number of borders in conflict

Table 7.8 Type of conflict (existence dummy) and frequency of occurrence

Period	Minor Conflict	Intermediate Conflict	War
1990-1995	24	18	15
1996 to 2000	21	16	14

Table 7.9 Summary of countries and total number of borders in conflict

REGION	COUNTRIES	NUMBER OF BORDERS	TOTAL BORDERS IN CONFLICT
North Africa	Algeria	6	4
Sub-Sahara Africa	Burkina Faso	6	3
	Central Africa Rep.	5	5
	Chad	6	3
	Congo, Dem Rep.	6	6
	Congo Rep.	5	3
	Ethiopia	5	4
	Guinea	6	5
	Kenya	5	4
	Mali	7	3
	Mauritania	4	3
	Niger	4	3
	Nigeria	4	3
	Rwanda	4	3
	Tanzania	8	5
	Uganda	5	3
	Zambia	8	3
Asia	India	7	4
	Pakistan	5	3
	Thailand	3	3
Latin America	Colombia	4	4

CHAPTER EIGHT: CONCLUSION

8.0   INTRODUCTION

In this chapter, I intend to provide a summary of the findings for the entire study, provide an overall conclusion in which the policy recommendations are made, give explanations on what possibly limited the results of the study especially in terms of the observed effects of conflict and refugees on economic growth and, finally, to give suggestions for future research avenues.

8.1   SUMMARY OF FINDINGS

In this sub-section, findings of issues specific to the study discussed through theoretical analyses and empirical results have been summarized. This study includes the use of 72 countries in Africa, Asia and Latin America. Single cross section and panel data methods have been used to analyse the relationship between the prevalence of conflicts and the flow of refugees in developing countries and cross country growth differentials in a Solow growth model framework (transition dynamics). The study also empirically determined the factors behind the movement of refugees in developing countries and the spill over effects of conflicts The key issues are taken on one at a time and findings in the mentioned analyses are summarized.

8.1.1   REFUGEES

- There is a considerable amount of refugees in developing countries. Africa had almost 5.5 million refugees in the early 90s while Asia had close to 8 million in the same period.

- When the refugee population is taken in relative terms, Sub-Saharan Africa showed up as hosting a higher percentage of refugees per population although this is slightly above the percentage of refugee per population for Asia-0.9% and 0.7%.

- 22 countries in sub-Sahara Africa host approximately 1% of refugees per population, 11 countries have between 1 to 5%; there are 6 countries with no refugees and 1 country with between 5-10% of refugees. Similarly, Asia and Latin America have 3 and 6 countries with no refugees, 9 and 7 with about 1% of refugees per population, respectively. Asia is also found with a country which has between 5-10% of refugees per population.

- Theoretically, this study argued, refugees increase insecurity in the host countries, increase labour supply and possibly depress wages, pose a burden on the supply of already inadequate social amenities and increase the spread of diseases. Refugees also are sometimes innovative and establish businesses in the host countries, create market for the demand of locally produced goods and attract international agencies.

- Refugees affect 'poor' countries negatively where as their effect on 'rich' countries is positive.

- Generally, results on the effect of the percentage of refugees a country hosts on its per capita GDP growth are mixed. However, the results indicate that there are regional differences on the effects of hosting refugees.

- The data does not indicate the short term effects of refugees on host countries (panel data analysis).

8.1.2 CONFLICT

Conflict has been a major issue of concern for the economic development of countries in the South. Three types of conflict prevalence in developing countries are observed in this study. The effects of these conflicts on economic growth of selected countries are summarized below:

- More than half of the countries in Sub-Saharan Africa in this study have been in conflict (at least once) from 1990 to 2000. Similarly, 12 of the selected 14 countries from Asia and Latin America also experienced conflict at least once within this period.

- Theoretically, the study demonstrated that conflicts divert scarce resources away from social services, disrupt trade, discourage tourism, contribute to the breakdown of family structures, destroy physical capital, limit civil liberties, reduces propensity to save, constitute portfolio substitution and reduce the per capita taxable capacity of the state.

- The indirect effect of conflict on economic growth is especially observed on the free flow of trade.

- The effect of conflict on different per capita GDP thresholds also indicates that conflict hurts 'richer countries' more than it does on 'poorer countries' signalling the opportunity cost effect of conflict.

- The results indicate that conflict significantly reduces the growth rate of real GDP per capita in host countries. This is so, both in the long and short run.

- The study also discovered, contrary to intuition, that being in conflict does not deter the entrance of refugees into a country. This is consistent with the general observation of the data and the empirical results on refugees from source to destination countries wherein refugees were seen moving into countries with existing conflict.

- Empirically, conflicts make a good case as a push factor for the movements of refugees in developing countries. In addition, the economic situation of sending countries also determines the movement of refugees from one country to the other although this happens at a lesser scale as compared to conflict.

- The study also carried out a detailed investigation on the neighbourhood effects of conflicts. The study found out that the data indicate direct as well as indirect forms through which conflict in one country reduces real GDP per capita growth in the neighbouring country/ies.

- In a more general form, using panel data analysis, the study revealed that conflict in neighbouring countries reduces per capita GDP growth of other countries directly.

8.1.3 OTHER SOCIO-ECONOMIC VARIABLES

This study used several other socio-economic variables to explain the contribution of refugees and conflict in cross country growth differences. In this section, a summary of results on some of those variables is presented.

- This study demonstrates that (table 1.1) there has been a declining trend of real per capita GDP growth for most developing countries especially sub-Saharan Africa in the last 40 years. This study claimed that conflict and refugees in developing countries can explain some part of this declining trend. The 72 countries selected for analysis in this study, 4 of them from North Africa have an average growth rate of 1.02%, 40 countries from Sub-Saharan Africa have been growing at –0.34% in the past decade with Asia registering an average growth rate of 2.27%, and 0.61% for Latin America.

- The period 1990 to 2000 of this study started with sub-Sahara Africa countries having an average of $1977 per capita GDP, with $3966 for North Africa, $2149 for Asia and $4980 for Latin America. These initial per capita GDP variables have been useful in investigating the possibility of conditional convergence as predicted by the Solow model.

- There is some evidence of conditional convergence in the single cross section. This evidence is even stronger in the panel data results though business cycle effects might be influencing the results.

- The bivariate analysis of the relationship between conflict in a country and the country's level of physical investment indicates that conflict of any type reduces investment in physical capital. This echoes the diversion of funds from productive activities effects of conflict discussed in the theoretical section of chapter 5.

- In the lower thresholds of per capita GDP, investment in physical capital yields positive gains but this becomes negative on higher thresholds of per capita GDP. This suggests that the data confirm diminishing returns of capital accumulation.

- The population growth rate shows predicted results. This variable has a negative impact on economic growth in the long run (single cross section) but positive in the short run (panel data analysis).

- The results also indicate that high population growth is harmful for all economies irrespective of their level of real per capita GDP.

- On the pull factors, countries in a better economic situation attract refugees. So do countries with many borders. Further, the length (in kilometres) of a country's border with others also attracts refugees.

- The degree of freedom (especially political rather than civil liberty) which nationals of host country enjoy attracts refugees.

- Human capital variables, especially life expectancy, show robust results across different specifications. The study found out that an increase in life expectancy (over a long and short term) increases per capita GDP growth.

8.2   CONCLUSION FROM THE STUDY

This section will draw on conclusion from the findings of this study. Each chapter of the dissertation has a short conclusion which is also summarized in this section. My intention is to highlight key lessons learnt from the entire study.

- The use of conflict and refugees in determining factors responsible (possibly) for cross country growth differences in developing countries is important for several reasons. First of all, conflict and the flow of refugees are widespread in developing countries. Both variables, but especially conflicts, cause tremendous economic loss for host countries; they almost always affect and involve neighbouring countries, thereby

undermining regional stability and economic growth. They often engage the interests of distant powers and international organizations; and each of these variables continues to prevail in the world even today.

- The first thing to note about the study is that refugees hurt poorer countries most as the study found out that the effect of refugees depends on the economic situation of host countries. Countries with much lower per capita GDP and lower growth rates suffer most when they host refugees.

- Conflict reduces growth in the affected country. It hurts economies of developing countries but mostly those that are fairing relatively well.

- Many of the costs of conflict accrue outside the affected country. Countries sharing borders with other (conflict ridden) countries suffer a great deal of economic loss through no fault of their own. These conflicting countries themselves do not internalize these costs. The active participants in conflict (rebel groups in neighbouring countries and/or governments of such countries) can be presumed to ignore these costs, as they neither bear them nor are even aware of them.

- The cross border movements of refugees in developing countries show the movement of genuine refugees rather than economic migrants. Refugees do not move because of economic reasons, rather because of conflict in their countries which indicate persecution. From these findings, it is concluded that conflict is a major determinant of refugee flows but, more specifically, that refugees come from poor countries where there is conflict.

- Having conflict does not stop refugees from seeking asylum in many developing countries probably because conflict does not affect all parts of the country at the same time. Refugees moved from one conflict affected country (normally their countries of origin) into equally conflict affected countries. A few examples which fall into this bracket include Angolans in Congo DR, Rwandans in Burundi and Sierra Leoneans in Liberia and vice versa.

- Population growth reduces growth in the long run as predicted by the Solow model but this variable is positive on growth in the short run. The positive results of the population growth rate on economic growth could also indicate reverse causality. Increases in GDP per capita indicate that people can now afford better medical facilities. This action reduces mortality, especially infant mortality. Furthermore, high per capita growing countries will attract migrants (in this case not necessarily

refugees) increasing the stock of labour which, in turn, increases economic growth (depending on the increase in physical capital). All of this, however, is only possible in the short run since people's fertility rates respond differently in the long run with increases in GDP per capita.

- Finally, the study finds sufficient evidence of the importance of using the prevalence of conflict and the refugees as key determinant variables of observed cross country growth differences in developing countries. Both variables have been found to be useful in explaining differences in per capita GDP growth in Africa, Asia and Latin America. All this notwithstanding, there were still some bottle necks which hampered the indication of clear-cut results in this study. In the next section, the limitations of this study are discussed to prepare other interested researchers in the field who might want to undertake similar research. These could also be important in the context of further research.

8.3 LIMITATIONS OF THE STUDY

In the course of the analyses in this study some problems have been encountered, which may not have been foreseen earlier, and which are believed to have influenced the results. Some of these problems were taken into account and precautions put in place while others were unavoidable. However, I wish to state these problems to indicate awareness of them and to outline how some of them have been dealt with in the analyses. The evidence of the results on the refugee variable's effect on economic growth has been confusing. Many of these problems might probably have something to do with the data on the refugee variable. Chapter 4 has already discussed problems of data collection on refugees but this sub-section gives possible reasons for the relatively weak results on refugees and offers suggestions on how to improve the situation for future analyses on related issues.

Mixed results on the refugee variable may have been due to statistical irregularities beyond my control. It is possible that the refugee variable does not measure all that is needed for these analyses. Statistics on refugees do not count all the refugees in developing countries because refugees are either not properly counted and often also because not all refugees are counted. This is the case with self-settled refugees. Most refugees --about 60% -- live outside organized camps and are widely scattered amongst local populations. Numbers fluctuate rapidly as new refugee flows emerge and others repatriate (Adepoju, 1989). From observation, the self-settlement of refugees appears to directly relieve both the host government and voluntary and

international agencies concerned with the welfare of refugees. But the effect of these refugees on the economy might be just the same as those under the protection of specialized agencies or even worse since they are not catered for. This measurement error in the data might under-estimate the effect of refugees since the data does not capture all refugees present within a country.

Another related issue on refugees is the inability of the author to directly observe or the data to indicate what the refugees are actually doing in the host countries and where they are actually residing. It would have been helpful to know whether refugees are spread over the country or concentrated in some border regions. This has implication for the analysis as refugees in regions of a country that have abundant natural resources (forestry, waters etc) might ease the effect on host country economy as they could be engaged in self-sufficiency economic activities. The study attempted the use of a non-linear form of the refugee variable in some specifications but results are not significantly different from the linear specifications. It would have still been better to have a measure of where refugees stay within a country. This is also the case with the conflict variable which states that a country is in conflict but omits the share of the country that is directly affected by the conflict. A conflict that is only directly felt by a fraction of the country will have different effects than one that makes the overall country unsafe. This is also the underlying factor in the use of the fixed effects model which takes these country specific unobserved effects into account but does not necessarily solve the problem since the model differences these effects out. The host refugee ratio in regions where refugees are concentrated would have been a better indicator than assuming the spread of refugees over the entire country's population.

The results marginally indicate that the effects of refugees depend on the economic situation of host countries. The proxy for the economic situation of host countries was the real per capita GDP, which is not a sufficient proxy in itself. Since the effect of refugees on host countries depends heavily on the economic situation of the host country more variables of economic situation could have been used to further establish this relationship. The single cross section and panel data methods grouped both types of countries (good and bad economic situation) and my suspicion is that this might be the reason for the negative and positive sign on the refugee variable in most of the estimated results.

What is more, the effects of refugees could also have better be seen if the economic situation of the countries they came from is controlled for. For example, the human capital endowment of refugees could have been traced by looking at the source country human capital (common proxies being life expectancy and education variables) but an ensuing problem will be the source country information since this is not always provided. Refugees to a destination country may come from several source countries posing a modelling problem. This variable would have been more helpful in establishing the effects of refugees on host countries' economies as fleeing refugees are endowed not only with human capital but also financial capital. Refugees from relatively rich countries could establish businesses in their new environment and actually prosper. The study, in some respects, assumes that refugees are a burden by not taking some of these factors into consideration.

A particularly important variable that has been omitted (because of data unavailability) in estimating the effect of refugees is the amount of inflow of international assistance there is to refugee affected countries. Obviously, the amount of financial assistance a country receives reduces the burden of refugees[1]. Large inflow of international help per refugee may boost GDP per capita in host countries and make refugees less of a burden for the host countries' public spending. This is important both in the case of financial and non-pecuniary assistance. In the first case, the money may be spent on products created in the host country. Thus, controlling for such additional information would provide better insights into the effects of refugees. The distribution of aid could have been a proxy used in this study if only aid was distributed on the basis of hosting refugees or at least on the basis of a country's poverty situation[2]. International involvement in conflict might also reduce the direct cost of conflict on countries. During the cold war era, especially, countries incurred lower expenses in the procurement of arms and munitions (reducing the diversion cost of conflict) since they received international support (from super powers) towards the conflict. The diversion of the conflict effect observed in the results might have been over-estimated since countries in conflict still do receive multilateral and bilateral aid. This aid can be directed at development projects in safe areas of the country especially for targeted aid; alternatively, such assistance could be diverted into the conflict further depressing economic growth.

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[1] The UNHCR (2002: 66) Statistical Yearbook 2001 only provides information on UNHCR per capita expenditure for 10 countries.
[2] On the distribution of aid, see Alesina and Dollar (1998); Dollar and Burnside argued that the distribution of aid is mostly determined by strategic locations of countries, colonial ties, and so forth, rather than on absolute need.

Another limitation on the data in this study is that the refugee variables do not measure how long refugees have stayed in a country. The data states the stock of refugees and the number of returnees repatriated but does not state how long these refugees have been in exile. This might also influence the effects of refugees since, the longer people stay in a country the more conversant they become with the people, the system and the higher the likelihood for them to be able to engage in profitable economic activities. This also relates with the conflict variables. Although the duration of conflict was assessed for the entire period, the number of months in a year that a country was in conflict could have been a better indicator as one year is a long period to observe a conflict that might have lasted for only one or two months.

The demographic data of refugees could have thrown more light on the effects of hosting refugees. However, this data was largely unavailable for many of the observations (only 41 out of 72 countries[3]) and for a very short period: 1996 to 2000. Furthermore, not all aspects of the demographic information of refugees is provided; the educational status of refugees was especially not available. An educated refugee population is more easily integrated into programs in the host countries and the more innovative refugees would be in searching for better living conditions.

To conclude this section, the factors discussed above indicate that the impact of refugees on economic growth in the host country can show negative, negligible, or positive results since the omitted variables were equally important. The issue, therefore, is not an easy empirical one. One consequence is that my specification might be too simple to identify the important refugee effects on host countries. However, most of the points mentioned above relate to omitted variables and/or measurement errors which are, unusual inevitable problems in most empirical analyses involving developing countries. However, some concrete recommendations can still be made based on the results of the study and also the limitations stated here.

8.4   RECOMMENDATIONS AND POSSIBLE POLICY SUGGESTIONS

It has been sufficiently established that there is an inverse relationship between conflict and economic growth. Refugees are a benefit or a loss to host countries, depending on the economic situation of these countries. In this section, I wish to state the recommendations of

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[3] So this study does not report the results on the demographics of refugees though the analysis were carried out because of inconclusive results due to data unavailability but also because of the little variation in demographic structure of reufgees.

this study based on these results after deliberation on the factors militating against the 'not very clear' results on refugees.

- Everything should be done to avert the spread of conflict either from neighbouring countries or the initiation of conflict within a country. This is especially important for countries that have not experienced conflict and are relatively doing well. Even where conflict has already been initiated, international support should be mobilized to quickly bring conflicts to an end. This will prevent the subsequent effect, which is, most often, the flow of refugees.

- Several ways of preventing the initiation of conflict or the continuation of existing ones have already been suggested in the literature. Nonetheless, tackling some of the economic incentives of conflict will go a long way towards resolving some of the deadly conflicts in the developing countries. A step in the right direction initiated by the international community is the ban of the sale of minerals from conflict affected countries. This is the popular case of 'conflict diamonds'. However, mechanisms to monitor the implementation of such bans should be strengthened. For some countries, particularly in Africa, natural resources have become a curse rather than a blessing. The use of natural resources to fuel conflict poses a double edged sword on the economies of developing countries. Efforts to reduce reliance on natural resource as major sources of economic growth should also be encouraged.

- Further, the presence of neighbourhood conflict effects means that foreign assistance, and other policy decisions to counteract the harmful consequences of a conflict, must be directed at the host country and some of its neighbours. Given the magnitude of the spill over effects of conflict in this study, required assistance in neighbouring countries may be as important as in the conflict-ridden country itself. This is particularly the case for post-conflict reconstructions. Neighbouring countries should also be considered in such reconstruction activities as they would have equally suffered from the conflict.

- The effects of some of the variables of this study cannot be solved by policy suggestions. The number of borders and border length effect, for example, in attracting refugee flow cannot be influenced directly by any policy. Even the most obvious policy which is to tighten immigration control finds countries violating international treaties. The implication, therefore, is that the international community should strive to resolve conflict (at least intervene in its early stages) to avoid subsequent effects on

other countries since these effects cannot be controlled/avoided once the conflict has started.

- Physical capital is found to be more beneficial for Sub-Saharan Africa and Latin American countries as the results indicate diminishing returns on physical capital accumulation on the Asian data. Therefore, physical capital growth should be stimulated in poorer countries. Since one of the arguments for the failure of aid to produce desired outcomes is corruption, aid in the form of physical capital to developing countries but especially Sub-Saharan Africa and Latin America is highly recommended in this study. Additionally, a large part of the assistance to refugees should be directed to refugee hosting countries whose economic situations are poorer. Aid should be particularly directed to lower middle GDP countries that have considerable amounts of refugees since they suffer most from their generosity towards refugees.

- Further, there is urgent need for reliable data on developing countries, especially on refugees, to enhance more accurate analysis. In designing relevant assistance programmes for refugees, the first step should be to ascertain approximately how many there are, where they are located and their specific, immediate and long-term needs. Accurate estimates of refugee populations in developing countries are hard to come by, and solutions to the problem will be more difficult to suggest if there are no clear-cut results because of data irregularities.

- Conflicts have been extremely costly to national economies of developing countries. However, most of these conflicts have been highly profitable for rebel forces and their leaders, arms manufacturers and salesmen, foreign mercenaries and traders in diamonds, timber and ivory, and so forth. There is need for international collaboration to curtail these forms of businesses especially given that a large part of them are illegal. Furthermore, people found guilty of such offences should be legally punished as a deterring measure.

- The pillars of developing countries' external relationship with the Western industrialised countries are trade, aid and direct investment, all of which have been proven to decline with the prevalence of conflict in these regions. Increase in trade links among developing countries is believed to reduce the probability of conflict within the region. Therefore, programmes to increase trade among countries in developing regions, and also such countries with Western regions, should be

strengthened as economic interest is known to increase interest in the political situation of a country as well.

- Although the area affected by refugees and conflict in this study is mostly Africa and few countries from Asia and Latin America, the concern it evokes should, indeed, be global. Even if the effects of conflict and refugees are considered to be heavy on the host countries in the short term, in the long run, the effect might spread into neighbouring and even distant countries. The cost of refugees can spread to all parts of the world as Western countries have been stressing on these issues in the last decade. This evokes the desired need for concerted effort among all countries of the world to reduce refugee induced factors.

- Finally, this study would recommend the use of case studies to investigate related issues on developing countries as a way of complementing cross country analyses. Most of the issues mentioned in the limitation of the study section could be clarified in a case study, which is, however, not appropriate for cross country analyses. Country specific analyses are still recommended for the expansion of this study.

Based on the findings of this study, conclusion, limitations and recommendations, the next section will suggest few avenues for future research. A dissertation on such interdisciplinary concepts -- refugees and conflict -- cannot, single-handedly cover all aspects of these diverse phenomena in the limited time of study. Should other interested researchers want to engage on further related work or expand on the existing study in the future, the next section suggests possible areas that could be looked into.

8.5   AVENUES FOR FUTURE RESEARCH

In this study I have focused on the effects of conflict within the affected country. The study further examined the externality of conflict but only within its immediate vicinity. I have neither considered the regional nor the global cost of conflict. It is important to note that civil war spreads over neighbours, regions and the effects sometimes go as far as affecting the globe as a whole. This will be a possible extension on the externality of conflict. Such analyses will give stronger support for the international community to take the effects of conflict more seriously and strive harder for the eradication of conflicts.

Another very important aspect of conflict, that the current study did not cover, is the post conflict economic recovery situation of countries emerging from conflict. It is more appropriate to look at the post conflict situation of countries at least five years after the end of the. This is not possible here; for the current study the end period (2000) is still too recent to observe how countries are readjusting. This implies that in the near future, such analyses will be possible.

On the case of refugees, the massive out-flow of refugees, although often caused by inappropriate and oppressive state policies, also affects the country of origin. A large refugee influx to a neighbouring country is a great loss to the labour force and market of the country of origin and the consequence of this on economic growth and development can be very serious in the long run. It will be interesting to see if the flow of refugees out of a country reduces its per capita GDP growth, or whether it increases it as fewer people will be there to care for. A related line of research will be to investigate the contribution of refugees in the home countries even while in exile. Do refugees' remittances (for those who gain employment) while in exile contribute to economic growth? Do they, in fact, support arm insurgencies in their home countries, which will further depress economic growth?

What is more, little attention has been devoted to the development implications for the homeland when there is mass repatriation. The returning population could pose an additional burden of dependency for an impoverished receiving country, on the one hand. On the other hand, returnees may serve as a pool of human resources on their return especially for those who would have learnt skills during the stay in exile. It will be interesting to undertake research on the economic situation of refugee 'producing' countries after the refugees have left as well as when they return home

Finally, this study has empirically established the positive link between the flow of refugees and conflict. A more interesting area would be an examination of the reverse situation; answering questions on how refugees increase the probability of conflict initiation in host countries. However, several ideas could emerge from a single research project. Attempt is made in this section to highlight only few of these.

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Eidesstattliche Versicherung

Ich versichere hiermit eidesstattlich, dass ich die vorliegende Arbeit selbständig und ohne fremde Hilfe verfasst habe. Die aus fremden Quellen direkt oder indirekt ubernommenen Gedanken sowie mir gegebene Anregungen sind als solche kenntlich gemacht. Die Arbeit wurde bisher keiner anderen Pröfungsbehörde vorgelegt und auch noch nicht veröffentlicht.

München, den 5 März 2004

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