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Uganda and the Democratic Republic of Congo: Children at War

Toby N. G. McCarroll

Abstract
This article takes a comprehensive look at the state and development of youth in both the Republic of Uganda and the Democratic Republic of Congo (DRC). The primary focus of this article is given to the thousands of child soldiers that have been abducted by militant groups and trained to viciously kill in their most vulnerable adolescent years. Following a brief literature review of published sources that discuss the impacts of conflicts on children in Uganda and the DRC, this article provides an insightful analysis of the youth exploitation crises in these two countries and examines methods that have been implemented to reduce the involvement of youth in these conflicts.

I. Introduction
Innocent children being forced to fight in war is an awful crime against humanity. Both Uganda and the Democratic Republic of Congo (DRC) have extensive histories with direct child involvement in armed conflict. These confrontations, such as the clashes between the Ugandan and Congolese governments against the Lord’s Resistance Army (LRA) and other rebel groups have resulted in thousands of children being abducted and forced into armed conflicts over the years.

Taking advantage of political and social instability, rebel groups have frequently abducted young boys to fight in armed combat, and girls as sex slaves for gross exploitation. As recently as 2005 in Uganda and 2007 in the DRC, government forces have also come under scrutiny from human rights organizations for being just as bad as the rebel groups, as they too were charged with recruiting child soldiers.

1 Becker and Tate (2003) p. 2.
The LRA formed in Uganda in 1986 under the leadership of Joseph Kony and has contributed to killing hundreds of thousands of innocent people, disrupting and tearing apart families, and creating an overall unsettled atmosphere in the country. The LRA has since spread from Uganda into nearby neighboring territories, including the DRC, killing thousands and abducting over 30,000 children since their inception in 1986. Newer rebel groups like the M23 are fresh obstacles the government of the DRC has recently been challenged by, and their continued fighting has wreaked havoc on an already unsettled and displaced society.

Child involvement in warfare has had detrimental impacts on the development of children and the possibility of a future stable society. Not only have children been directly killed, illegally abducted, and separated from their families, but they have also been deprived of access to a proper education, health services, adequate nutrition, and other basic necessities as direct or indirect results of war.

The Ugandan government conducted the Juba peace talks with the LRA in 2006, which effectively ended the armed conflict in Uganda. In the DRC, the fighting between the DRC and M23 has only just ended, with peace talks still underway. That being said questions remain unresolved; and these countries are still plagued with violence and instability from other militant groups. If the fighting ever ends, there will still be a great need for mass regrouping and rehabilitation to take place before society can return to a productive state.

This article is structured into eight sections. Following this introduction, the second and third sections provide, respectively, a brief literature review and some empirical background. The fourth section summarizes why and how children are chosen to fight, while the fifth section describes the life of an abducted rebel child. Section six examines the effects of child warfare on children and society, while the seventh section describes some of the main measures taken to resolve conflicts and reduce child involvement. The final section attempts to draw conclusions from the information presented throughout the article.

II. Brief Literature Review

There are numerous reports and documents compiled by international organizations, academics, and non-profit groups that discuss the impacts of war on the development of children in Uganda and the DRC. The Human Rights Watch Report by Becker and Tate (2003) provides a detailed history of the LRA in Uganda and gives several invaluable accounts from children who were recruited by the LRA. In addition to condemning the LRA, the report also criticizes the Ugandan government for violating international law and recruiting child soldiers.

Since 2003, more up-to-date literature has become available, as conditions have changed in Uganda and the DRC. The non-profit organization Child Soldiers International notes in the Child Soldiers Global Report 2008 that some 2,000 women and children are still being used by the LRA in Uganda, and over 7,000 are in armed groups in the DRC. The report extensively discusses actions taken by the governments to try and reduce the number of child soldiers in conflict, noting however, that some of these legislative measures have been delayed in becoming law or are not properly enforced. Both Uganda and the DRC were highlighted as two of the world’s 19 countries that recruited child soldiers between 2004 and 2007.

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4 Invisible Children (undated).
The United Nations Children’s Fund (UNICEF) (2009) report reviews the broader societal issues effecting the development of children in Uganda and the DRC. Issues including health, education, HIV, child protection, and nutrition are discussed. Reports on both countries highlight the direct impacts of the LRA’s attacks on women and children, and the implications these attacks have on child development and social institutions.

Helmut Spitzer and Janestic M. Twikirize (2013) note that the number of child soldiers is decreasing in Uganda since 2006, although they have not fully disappeared. The article discusses the long-term effects of having children involved in armed conflicts and the ways in which child warfare prevents the improvement of social services, education, and other important societal developments.

An Amnesty International (2012) news item entitled “Landmark ICC Verdict Over Use of Child Soldiers” highlights achievements by the International Criminal Court (ICC) in beginning to bring justice to those who have used children as soldiers in conflict. The article highlights the conviction of Thomas Lubanga Dyilo, a Congolese military commander, for child war crimes. The article notes existing warrants of arrest out for the DRC’s Boscow Ntagada and for Joseph Kony (leader of the LRA).

Invisible Children, a non-profit organization that focuses on child soldier issues in Uganda, has recently taken the forefront in trying to create public awareness about the LRA. Their efforts went viral on social media in 2012, when they launched the Kony 2012 campaign. The group created a half hour video dedicated to informing the public about Joseph Kony, the LRA, and the crimes they committed against humanity. Almost 3.7 million people pledged support to the organization’s efforts to have Kony arrested and brought before the courts. Amazingly, the group was able to gather thousands of supporters in Washington, DC to rally for the arrest of the warlord. They have also been able to raise considerable funds to try and combat the LRA and track Kony down.

III. Empirical Background

In order to understand the full effects of the development of children in Uganda and the DRC, the economic, social, and developmental aspects of these countries need to be examined. It is important to note that both of these countries have been at war and have had political instability over the last 40 years. The inefficiencies or inability for governments to collect and analyze data as a result of the unstable environment has led to inconsistent statistical information. However, for the purpose of this article, efforts have been made to find common points of comparison where consistent and comparable data between Uganda and the DRC are available for some key indicators: gross domestic product (GDP) per capita, life expectancy, and infant mortality.

Figure 1 highlights the annual GDP per capita of Uganda and the DRC from 1970 to 2011. While it is typically more accurate to compare GDP per capita across countries after correcting for differences in purchasing power, given the limited availability and reliability for data in international $, we provide the data for both countries in current US$ and in constant 2005 international $, see Figure 1.

While both time series (current US$ and constant international $) show an overall decrease in GDP per capita for the DRC since the 1980s and an overall increase in GDP per capita for Uganda, the two time series show different trends for certain time periods.
For the DRC, GDP per capita in current US$ has declined drastically from 1980 to 1984, while it has remained relatively stable in constant international $. On the other hand, while GDP per capita has remained relatively stable between 1988-1993 if measured in current US$, it declined sharply in constant international $. The data in current US$ is more accurately reflecting the DRC’s unstable political climate, with numerous civil wars in the last 40 years.

For Uganda, the data in current US$ shows a drastic increase and a subsequent sharp decline in the late 1980s, while the data in current international $ shows a gradual increase. Data in current US$ shows another moderate decline in GDP per capita from 1998 to 2003, while it increased steadily during the same period if measured in international $. As for the DRC, the data in current US$ is better mirroring the conflict between the Ugandan government and the LRA, with the majority of fighting taking place between 1986-2005 and declining confrontations since the Juba peace talks in 2006.⁵

![Figure 1: GDP per capita (in current US$ and constant 2005 international $)](image)

Source: Created by author based on World Bank (2013).

In any case, it is clear that both countries are very poor, with GDP per capita in current US$ amounting to about US$1 per day for the DRC for most of the time, and to about US$2 per day for Uganda for most of the time.

⁵ Spitzer and Twikirize (2013), p. 69.
As shown in Figure 2, both countries also have remarkably low life expectancies. During 1970-2011, it ranged between 44-48 years for the DRC and between 44-54 years for Uganda. The volatility in life expectancy has been far higher for Uganda than for the DRC, which implies that the HIV/AIDS epidemic having had a far bigger impact in Uganda. Low life expectancy indicates a less productive workforce, high dependency ratios, and low school enrollment as children are often forced to drop out and work to support their families. In any case, warfare and civil unrest have undoubtedly contributed towards these low life expectancies.

**Figure 2: Life Expectancy at Birth, 1970-2011**

![Life Expectancy at Birth, 1970-2011](image)

Source: Created by author based on World Bank (2013).

Although infant mortality rates in both Uganda and the DRC are decreasing (as shown in Figure 3 below), progress in the DRC has been limited. While it increased slightly in Uganda during the late 1970s and early 1980s, Uganda has made considerable progress since, decreasing infant mortality from 115.2 per 1,000 live births in 1982 to 57.9 in 2011. In the DRC, infant mortality was reduced from 147.2 in 1970 to 117.3 in 1985, but then remained stable for the next two decades according to the World Bank (2013). Some moderate progress has been made in the DRC since 2005. In any case, infant mortality remains high in both countries if compared to the world average of 63 deaths per 1,000 live births in 1990 and 35 deaths per 1,000 live births in 2012.6

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6 World Health Organization (WHO) (2013).
IV. Why and How Children are Chosen to Fight

Children are generally innocent, easy to persuade, dependent on others, and still forming their morals and values. These qualities specific to children make them highly valuable amongst revolutionary and rebellion groups, as they are more likely and willing to submit to their captors’ views. In order to facilitate the military training necessary to force abducted children into conformity, children are quickly separated from captured adults. These rebel groups do this to prevent children holding onto societal values and connections with the past.\(^7\) Also as a part of their brutal training, children are forced to kill adults, or sometimes entire families with an assortment of weapons (oftentimes manually combative ones like clubs and machetes) provided to them by their leaders. Those who refuse to obey and carry out killings have often been killed themselves.\(^8\) Thus, there is usually only one option available to many children who find themselves in this predicament, either kill or be killed.

An article published by SOS Children (undated) suggests another motive for child recruitment in the DRC other than one of simply abducting children because they easily conform. The article suggests children have been actively sought because the enemy (which in a rebel groups case, are the government forces) often cannot not drive up the courage to kill mere children being forced to fight against their will. Thus, the rebels were able to lose fewer numbers in battle because they placed children on the front lines.

\(^7\) Storr (2014).
\(^8\) Storr (2014).
It was estimated in 2003 that around 3 in every 4 people abducted in Northern Uganda by the LRA were children.⁹ According to Becker and Tate (2003), children were most vulnerable to abduction from the LRA at night as the LRA conducted the majority of their raids on towns and villages in Northern Uganda under the cover of darkness. It was during these raids that they would coordinate widespread kidnappings, looting, and vandalism. As a consequence of these frequent attacks, many children became what was termed “night commuters.”¹⁰ Every night thousands of children would travel miles and miles on foot into areas like Gulu (see Figure 4 below) and Lacor, and take shelter in hospitals, schools, large tents, or surrounding pavements. It was widely believed these areas could provide more protection than their rural villages. Their parents would often remain in their homes to try to protect their property, as they were less at risk of being abducted. And in the event they were, adults were often released after providing short-term service to the group.¹¹ Children on the other hand, have hardly ever returned.

The trend of abductees getting younger was a scary element highlighted in the Becker and Tate (2003) report. It said that rebel groups were beginning to seek children as young as nine and ten years of age.¹² It can be assumed the rebels did this for the same reasons they go after children in the first place, the younger the child, the easier it is for them to convert the child into believing their practices and conforming to their violent ways. The report also highlights the pattern of abducting younger girls as they are less likely to have HIV/AIDS, and therefore, more desired by the rebels.

It is important to note however, that not all children have been forced into fighting for these rebel groups. It is suggested by multiple sources, including the Amnesty International (2003) Report on the DRC, that some children volunteered themselves. The report talks about a 1990s rebel group in the DRC, called the Alliance of Democratic Forces for the Liberation of Congo (AFDL), and suggests children joined this and similar groups as a means of escaping dire poverty.

Children were often enticed by an initial monthly payment of US$100 that was being offered to recruits (which was at the time about 10 times higher than the average monthly wage in the DRC).¹³ Adults and children were driven by the poor economy to fight for these groups that could provide financing for their basic needs. Some chose to join rebel groups to protect their ethnic backgrounds or were enticed by nationalistic feelings. However, it should be clear that the vast majority of children in these groups have been forced into fighting against their will.

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¹¹ Becker and Tate (2003), p. 6.
¹³ Amnesty International (2003), p. 3.
Figure 4: Map of IDP cap sites and return cites in the Gulu District in Northern Uganda

V. Life of an Abducted Rebel Child

Being a child soldier for an armed rebel group is not an easy or enjoyable task. Apart from the gruesome training boys go through after being abducted, they have to complete a number of unpleasant duties and services for their commanders besides fighting in direct combat with government forces. Children in both Uganda and the DRC are assigned similar responsibilities regardless of the specific rebel group they are forced into. Many sources examined seem to point towards children having to fetch water, carry looted supplies, collect wood, cultivate, cook and undertake other laborious tasks.\(^\text{14}\) When abducted in mass groups, children are often roped together around their waist, forming a long coffle, and are forced to carry the looted supplies the rebels sought from defeated villages.\(^\text{15}\) Although widespread abductions have become rare, child abductions still take place.

In combat, young boys face the brunt of the battle and have often been forced to undertake the most horrible and heartless tasks. The United States Bureau of Citizenship and Immigration Services (1997) report highlights the fact that the LRA officers would have the children serve on the front lines of the battles, forcing them to kill, and would usually not allow them to take cover when under return fire. They forced children to shoot and attack the enemy fully exposed, while the leadership safely took cover behind them. In the DRC, child soldiers have faced similar traumatic events. As a way of conditioning the children serving in the AFDL, they were routinely brutalized, like 11-year-old Oliver, who testified:

> The commander ordered me personally to [kill] and told two other soldiers to watch over me and kill me if I refused to obey. And so I killed, I fired on these people. They brought me a woman and her children and I had to put them in a hole and bury them alive. They were screaming and pleading with me to spare them and release them. I took pity on them, but then I looked over my shoulder at the two soldiers watching me, and I said to myself: 'If I let them go, these soldiers are going to kill me.' And so I went ahead and buried the woman and children alive, to save my own life.\(^\text{16}\)

This is only one of the thousands of testimonies regarding the horrific acts child soldiers have been forced to commit in both Uganda and the DRC. Any kind of refusal by child soldiers has often resulted in immediate beatings or death.

Although boys in rebel groups are forced to undertake dangerous combat, the girls in Ugandan or DRC rebel groups have it just as bad, only in a different way. Girls abducted in both of these places are forced into becoming sex slaves for the commanders of these groups. Adolescent girls as young as twelve years old have been given away as “wives” to the soldiers who could exploit them as much as they pleased.\(^\text{17}\) Girls lose all control over their bodies, and are often forced into pregnancy. They are also at an extremely high risk of contracting sexually transmitted diseases (STDs), including HIV/AIDS from their captors.\(^\text{18}\)


\(^{15}\) Becker and Tate (2003), p. 7.


\(^{18}\) Becker and Tate (2003), p. 2.
VI. Effects of Child Warfare on Children and Society

Warfare and civil unrest in Uganda and the DRC have caused a plague of negative societal issues in these countries. One big problem is displaced migration. In Uganda, children would often have to “night commute” into bigger towns where rebel groups were less likely to attack in order to avoid being abducted (as already mentioned above).

Even worse however is the fact that entire communities are displaced due to violence. During the height of violence, more than 1.5 million people in Uganda are said to have fled from their rural homes to more secure camps that they hoped would provide better protection. In the DRC, is it estimated that around some 2 million people were living in internally displaced persons (IDP) camps in 2010. This migration and displacement of people in both countries has had huge implications on the economy, as people have had to find new means of employment or ways to generate enough to meet their basic necessities, as they no longer have their plots of land to cultivate.

Displacement and general warfare is also said to have contributed to health epidemics in both of these countries, particularly children who are most vulnerable to catching communicable diseases. In the DRC, the impoverished health care system is plagued with under funding, staffing shortages, corruption, and lack of appropriate facilities to handle the population. Similar challenges are also faced in Uganda. Consequently, IDPs in both the DRC and Uganda are particularly vulnerable to diseases like cholera and hemorrhagic fever as the IDPs live in overcrowded spaces lacking proper sanitation.

Widespread family issues have also developed as a result of child warfare. Spitzer and Twikirize (2013) state that approximately 22 percent of children in the Northern Uganda are orphaned as a result of their parents, siblings, and family members being killed off or unable to be found as a result of displacement from the conflicts. In addition, it is well noted by many reports that children who have managed to escape from the rebel groups are often shunned and turned away by their families and communities. Their families are often unwilling to allow children who have committed such awful crimes against humanity back in to their societies, which leads to numerous emotional and psychological problems for the children. They not only have to live in fear of being re-abducted by rebels and being punished for escaping, but some have nowhere to go or call home as they are not welcomed back into their communities.

The education of children in both of these regions has also been widely impacted by all of the aforementioned. The abduction of children and the physical prevention of them attending class is only one part of the problem. And not only are there challenges around getting children safely into school, but providing classroom facilities and instructors has also been a vexing issue for education officials. Spitzer and Twikirize (2013) note that a number of schools in Northern Uganda have been torched and hundreds of teachers have been killed by rebel forces. These challenges are illustrated by low literacy rates, which stood in 2010 at 67 percent in the DRC and 73 percent in Uganda.

22 Spitzer and Twikirize (2013), p. 70.
VII. Measures Taken to Resolve Conflicts and Reduce Child Involvement

Governments and international organizations have undertaken numerous steps to try and stop child warfare in Uganda and the DRC in the past few years. Although many measures have been delayed, some changes were finally made in the mid 2000s. Perhaps the biggest achievement for the Ugandan government was the Juba Peace Talks in 2006, which drove the LRA out of the country. Unfortunately however, these peace negotiations forced the LRA to retreat to bordering countries like the DRC, South Sudan, and the Central African Republic, where, for example, violent attacks and massacres were carried out during Christmas in 2008 (see Figure 5).  

Unfortunately, the DRC is still trying to deal with numerous rebel groups in the country, including the LRA. In November 2013 however, the government of the DRC successfully defeated the M23 rebel group after over a year of fighting.  

Figure 5: Route taken by the LRA in the DRC during the 2008 Christmas Massacres

A number of legislative amendments have also been made to combat the recruitment of child soldiers by government forces in Uganda and the DRC. These measures are highlighted in the Child Soldiers Global Report (2008). An amendment to the United People’s Defence Force (UPDF) in 2005 stated clearly that eighteen was the minimum age of recruitment in the government-armed service. Similarly in 2007 a comprehensive bill of child protection laws was being tabled in the DRC. Enforcing these and other protections has proven to be a challenge for these governments however, and they have come under fire from multiple human rights groups.

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25 BBC (2013a).
for continuing to use child soldiers. While this is unfortunate and true, it is clear that both governments are trying to make progress towards eradicating children from their armed forces.

As previously mentioned in the literature review, the ICC is also actively involved in trying to bring justice to those who have committed intolerable acts against humanity, particularly children. They have had recent success with the conviction of DRC national Thomas Lubanga Dyilo, but there is still a great deal of work to be done. Unfortunately, Joseph Kony, the notorious LRA leader still remains at large despite being on the top of the ICC’s most wanted list.26

There are numerous non-government organizations (NGOs) that are dedicated to ending child warfare in Sub-Saharan Africa. One organization that is especially notable and focused on Uganda and the DRC is Invisible Children. The organizations informative 30 minute video “Kony 2012” went viral on the internet last year.27 It inspired many, including the author of this article, to learn more about the injustices against children taking place in these countries. In addition to promoting international awareness, the organization is actively involved on the ground in Uganda and the DRC.

Recent success has been made by Invisible Children with their attempts to encourage captured children and adults to defect and escape. Invisible Children has distributed over 690,000 flyers (often dropping them by airplane over LRA territory in the DRC and the Central African Republic) and has produced 5 defectors who showed up with the flyer in their hands.28

In addition, the NGO has also established a comprehensive radio network dedicated to encouraging LRA defectors to come home. The radio messages have been extremely successful in motivating captured children and adults to defect. Invisible Children reported that 89 percent of escapees running away from the LRA have done so since the broadcasts began and have claimed that it was the broadcasts that encouraged them to run away.

VIII. Conclusion

Child warfare is unquestionably wrong. It is sad that in this advanced day and age we still have children being abducted, abused, raped, and forced to kill and commit other unthinkable acts by rebel groups in Uganda and the DRC. Although child involvement in conflict appears to be on the decline in both countries (especially in Uganda), any child being forced to fight against its will is one child too many. Unfortunately, it is estimated that 2,000 abducted children are still held captive by the LRA.29

Efforts being made by prosecutors at the ICC and NGOs like Invisible Children in conjunction with Ugandan and Congolese authorities to fight the LRA are proving successful. However, at the time of writing, many of these criminals, including Joseph Kony, have yet to be captured. Successful efforts aiming to reduce the enrollment of children in government and other armed forces from legislative standpoints appear to be making progress. While preventing children from conscripting has proven more of a challenge, the advancement of recent legislation shows efforts the governments are making to try and combat this issue.

What remains troubling for these nations are the countless children that are left orphaned. The physical, emotional, and psychological scaring of these children are also pressing issues that need to be dealt with. The mass displacement of people in IDP camps who lack access to adequate nutrition, healthcare and educations are other major problems.

Clearly, there is a great deal of work to be done even though rebel groups and direct child involvement in warfare is declining. Society has a number of child development and social issues to deal with as repercussions of decades of instability and child warfare. Perhaps the former Executive Director of UNICEF, Carol Bellamy, stated it best when she said the Northern Ugandan region is “pretty much the worst place on earth to be a child.”

References


30 Spitzer and Twikirize (2013), p. 73.


Land Reform and Agricultural Development: Zambia versus Zimbabwe

Amélie Thouvenot

Abstract
This article examines the impact of the land reforms undertaken in Zambia and Zimbabwe on agricultural development. The Zambian land reform of 1995 has led to significant improvements in agricultural productivity and output since the early 2000s, allowing for a rising GDP and hopes that such growth will be redistributed across the education and health sector. In Zimbabwe, the land reform of the 2000s led to economic dislocation, a phenomenal drop in total agricultural output, an uncontrolled inflation, a rising debt obligation to foreign nations, and an overwhelming loss in resources as political conflicts sparked violence.

I. Introduction
At the time of independence, both, the Republic of Zambia (henceforth Zambia) and the Republic of Zimbabwe (henceforth Zimbabwe) inherited a distribution of colonial land ownership that was biased towards the white political elite. Zambia, which became independent in 1964, underwent three land reforms: first, the enactment of the 1970 Land Acquisition Act (which aimed at nationalizing land held by absentee landlords), second, the 1975 Land Act (which basically converted all land to statutory leasehold), and third, the 1995 Lands Act (which aimed at stimulating private, including private foreign, investment).

Zimbabwe, which officially gained independence in 1980, had only one land reform, which was initiated with the signing of the Lancaster House Agreement in 1979. The Lancaster House Agreement required that the government had to wait ten years before instituting land reform. Hence, though it was possible to sell and buy land under the so-called ‘willing seller, willing buyer principle’ before the 10-year waiting time, consistent with the Lancaster House Agreement, President Robert Mugabe started to implement a controversial land redistribution (the so-called fast-track resettlement program) in February 2000. The primary goal of Zimbabwe’s land reform was to transfer land ownership, rather than increasing agricultural productivity, as large commercial land owned by whites was redistributed to black smallholder farmers (Myers and Ames, 1984).
This article examines the impact of the Zambian and Zimbabwean land reforms on agricultural development in the two countries. Following this introduction, the next section provides a brief literature review, followed by some empirical background about the two countries. The fourth section examines the impact of the Zambian and Zimbabwean land reforms by analyzing the evolution of a) the share of agriculture in GDP, b) the value added by the agricultural sector, c) land productivity, and d) exports and imports of agricultural products. Following this analytical section follows then a descriptive section that tries to explain the outcomes as analyzed in the fourth section. The last section provides some conclusions.

II. Brief Literature Review

There are many publications that have covered the land reforms in Zimbabwe or Zambia; particularly Brown (2004), Myers and Ames (1984), Ng’ombe (2010), and Tekere (2003). Nyanga (2012) provides research related to the development of the agricultural sector in Zambia. A variety of news articles, like from AllAfrica¹ and Integrated Regional Information Networks (IRIN)², provide historical background as well as the present state of the agricultural, educational and political sectors in both countries.

- Brown (2004) describes the implementation of the 1995 Land Act in Zambia and explains how the conversion of customary to leasehold land tenure has led to social and economic exclusion, intra-community conflicts and elite capture. Brown’s research demonstrates that many factors have caused the market-based land reforms to benefit local elites and foreign investors instead of the poor Zambian villagers. These factors include a weak administrative capacity, limited human, financial and technological resources and competing authorities at the local level. Such forces, amongst others, have allowed elites and government officials to perverse the administration of land distribution. As a result, Brown claims that the land reform has failed in redistributing land to the poorer peasants and stimulating investment and productive smallholder agriculture.

- Myers and Ames (1984) provide a historical overview of Zimbabwe’s land policy reforms (until the article’s publication date). They explore the contributions these reforms have made to the nation’s agricultural productivity and economy. The article also describes the growth and eventual success of the European commercial agricultural sector and contrasts that with the decline in the traditional African agricultural sector. The article concludes that Zimbabwe needs to preserve the commercial sector and further develop the traditional agricultural sector. Myers and Ames also hint that the ongoing land policies, which saw some dilution of the ‘willing seller, willing buyer principle, were replacing white rulers with an African elite, once more excluding the poorer majority. They present the viewpoint that rural poverty in Zimbabwe can only decrease if changes are made to the institutions and class relationships that the country inherited from the colonial era.

- Ng’ombe (2010) is critical about the achievements of the 1995 Zambian land reform. He mentions that the conversion of customary land tenure to leasehold tenure is attracting

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¹ AllAfrica is a voice of, by and about Africa; available at: http://allafrica.com/
² Integrated Regional Information Networks (IRIN) is the humanitarian news and analysis service of the United Nations (UN) Office for the Coordination of Humanitarian Affairs; available at: http://www.irinnews.org/
huge interest from governments and the development agencies as they consider this conversion to triggering investment and facilitating economic growth. However, Ng’ombe (p. 12) concludes that “these reform proposals will continue to be frustrated by those who feel that traditional forms of holding land are still relevant especially to those communities who consider farming to be a way of life and not a business”. Ng’ombe also provides a useful overview of the various land reforms of Zambia.

- Nyanga (2012) conducted research from 2007 to 2010 to analyze the impact of conservation agriculture upon food insecurity. The paper claims food insecurity is caused by failures to promote research for improving agricultural productivity, to fund rural development and infrastructure, to provide access to education, technology, training services and a reliable and equally accessible food market. The research concludes that adopters of conservation agriculture are more food secure than non-adopters among smallholder farmers in Zambia.

- Tekere (2003) provides a detailed Zimbabwe case study for the Food and Agriculture Organization of the United Nations (FAO), focusing on the implementation experience of the World Trade Organization (WTO) Agreement on Agriculture, but also covers issues related to Zimbabwe’s land reform.

- Finally, news articles by Lewis (2013) and Crawford (2013) discuss the current economic state of Zimbabwe and give an historical background into Mugabe’s legacy and land reforms. These news articles describe the inhumane violence and political repression of Mugabe’s government and reach the conclusion that the land reforms would have been successful had the state provided more support, secure titles and cheap capital. Currently, Mugabe’s government is described as refraining from further radical actions since Zimbabwe’s current economy is on the brink of collapse.

III. Empirical Background

Zambia is a land-locked Southern African country. Before gaining independence from the United Kingdom in 1964, it was the protectorate of Northern Rhodesia. Agriculture is the main provider of employment, occupying more than 70 percent of the working age population. Mining has provided a major part of the country’s income and wealth; yet this source of revenue has proven unreliable as it is subject to volatile market prices. Maize is the main cereal produced in Zambia and while it is second to copper in economic value, it is more valuable socially and politically as it represents 65 percent of per capita consumption (Nyairo, 2011).

Zimbabwe faces similar challenges as Zambia. It is also a land-locked country, which achieved de jure sovereignty from the United Kingdom in April 1980, following 14 years as an unrecognized state under the white minority government of Rhodesia. Agriculture is also the main source of employment, but Zimbabwe has experienced significant declines in its net food balance and agricultural productivity, and is only beginning to recover from a long period of declining GDP per capita.

Given that there is no data for Zimbabwe’s GDP per capita in international dollars, Figure 1 provides GDP per capita in current US$ for both countries. While both countries started out with GDP per capita of about $400, that of Zimbabwe grew faster in the early decades, especially during the late 1970s. However, both countries experienced sharp declines in their GDP per
capita during the early 1980s. While Zambia’s GDP per capita remained relatively stable during most of the 1990s, Zimbabwe’s declined gradually, though with some volatility. The big diversion of the two countries in terms of income per capita happened during the last decade as Zambia took off, while Zimbabwe continued to deteriorate for most of the 2000s. By 2011, Zambia’s GDP per capita reached US$1,425, while Zimbabwe’s was recovering to US$757.

**Figure 1: GDP per capita (current US$) in Zimbabwe and Zambia, 1970-2011**

![Graph showing GDP per capita (current US$) in Zimbabwe and Zambia, 1970-2011](image)

Source: Created by author based on World Bank (2013).

As Figure 2 shows, there are no major differences in the evolution of life expectancy between the two countries, except that Zambia caught up recently with Zimbabwe. However, life expectancy at birth (in total years) remains extremely low in both countries: 49 years in Zambia, and 51 years in Zimbabwe, both for 2011.

**Figure 2: Life expectancy at birth (total years), 1970-2011**

![Graph showing life expectancy at birth (total years) in Zimbabwe and Zambia, 1970-2011](image)

Source: Created by author based on World Bank (2013).
The HIV/AIDS epidemic has been contributing to these low statistics, especially for Zimbabwe. As Figure 3 shows (reliable data exists only since 1990), though both countries had an HIV prevalence rate of about 14 percent in 1990, it increased sharply during the 1990s in Zimbabwe, reaching a maximum of 27.3 percent in 1998, after it decreased again to about 15 percent in 2010. In Zambia, the HIV prevalence rate hovered around 14-15 percent for most of last two decades, and declined then to 12.7 percent in 2010.

Figure 3: HIV Prevalence in Zimbabwe and Zambia, 1990-2010

![Graph showing HIV prevalence in Zimbabwe and Zambia from 1990 to 2010.](source)

Source: Created by author based on World Bank (2013).

Access to safe water and sanitation are low in both countries:

- In Zambia, access to sanitation has not increased over the past 40 years, hovering around 47 percent. This extremely low number has favored the spread of diseases such as cholera and diarrhoea,\(^3\) which are a major cause of mortality, especially in the poorest rural areas. Additionally, despite increasing rates of vaccination, infant mortality has further increased. All these elements come together to explain why Zambia has one of the world’s lowest life expectancy (about 49 years in 2011). Attempts to decentralize the health sector have been compromised and rising user fees have led to lower clinic attendance.

- In percentages terms, Zimbabwe’s access to sanitation facilities is about seven percentage points below that of Zambia. Access to sanitation was hovering around a gravely low forty percent, without any progress at all visible. Constant food insecurity (especially since the country has been relying on maize imports for sustenance) and increased rates of malnutrition have further increased individuals’ vulnerability to infections such as tuberculosis.

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\(^3\) Diarrhoea is the passing of watery stools more than is normal. It is often a symptom of an infection.
Though literacy rates vary considerably between the two countries (see Figure 5), both countries suffer from an under-financed, crumbling education system. Investment in school infrastructures and the acquisition of new teaching and learning materials is in desperate need in both countries.

- In 1990, the Zambian government’s educational expenditure was the lowest in the world in terms of GDP (2.5 percent) and was barely enough to cover the costs of primary education. For decades, Zambia’s system suffered from declining real public expenditures on education and disastrously high rates of non-attendance; which had reached 45 percent in rural areas (Saasa with Carlsson, 2002). The Zambian government, which used to completely control the educational system, has taken steps towards partnership in educational provision that would include the private sector, local communities, regional communities and other non-governmental organizations. This allows for private funding, ownership of educational institutions, and for greater local power and management of schools.

- Zimbabwe witnessed the downfall of its educational system (once considered the best in SSA), beginning right after its independence, as government expenditure was slashed, leading to eroding infrastructures and resources. Zimbabwe still boasts high literacy rates from its successful colonial educational system. However, the economic crisis of 2008 greatly disrupted the system: an estimated 20,000 teachers left the country and literacy rates and passing rates from primary school plunged (passing rates fell by 18 percent from 2008 to 2009) (IRIN, 2013a). Since the government was the sole provider for the system, funding for the distribution of school materials, the maintenance of infrastructures and the salaries of teachers ceased. Zimbabwe is now relying on the Education Transition Fund (ETF), established in 2010 and controlled by international donors. The government is relying on improving relations with the country’s teachers unions to obtain the 30,000 teachers (which represents a third of the current educational workforce, IRIN, 2013a).
IV. Analysis of Agricultural Development

IV.1. Share of Agriculture in GDP and Share of Agricultural Employment

Despite a high volatility, the trend lines in Figure 6 clearly show that Zambia’s share of agriculture increased over time, while that of Zimbabwe stagnated. In 1970, agriculture constituted 11.6 percent of Zambia’s GDP, while it increased to 19.5 percent in 2011. In Zimbabwe, agriculture constituted 16.7 percent of its GDP in 1970, while it decreased to 15.7 percent in 2011.
It should be pointed out that even though agriculture seems to be relatively unimportant for both countries if looking at the share of agriculture to GDP (which has basically always been below 25 percent for the last 40 years), Figure 7 shows that actually most of the Zambian and Zimbabwean people depend on agriculture for their livelihood. The percentage of people being employed in agriculture has actually increased during the last two decades for both countries. As of 2004/05, 65 percent of Zimbabweans were employed in agriculture, while 72 percent of Zambians were employed in agriculture.

**Figure 7: Agricultural Employment in Zimbabwe and Zambia (available years)**

![Bar chart showing agricultural employment in percentage of total employment in Zimbabwe and Zambia from 1999 to 2004/2005.](source: Created by author based on World Bank (2013).)

**IV.2. Value Added of Agriculture**

As Figure 8 shows, during the last 15 years, the agricultural sector has been gaining great value in Zambia but been declining in Zimbabwe. Given that these numbers are in current US$, Zambia’s progress is slightly less than the nominal numbers indicate, while Zimbabwe’s progress is actually worse (as a dollar today is obviously worth less today than 15 years ago).

**Figure 8: Value added of agriculture in current US$ in Zimbabwe and Zambia, 1970-2011**

![Line chart showing value added of agriculture in millions of current US$ in Zambia and Zimbabwe from 1970 to 2011.](source: Created by author based on World Bank (2013).)
IV.3. Land Productivity

Another way to look at agricultural progress is to look at land productivity, which is simply defined as the value added of agriculture divided by agricultural land. As the amount of agricultural land has not changed much during the last four decades (relative to the changes in value added), the trends of Figure 9 are similar to that of Figure 8. However, taking the changes in agricultural land into account, Figure 9 is reflecting the more accurate developments in agriculture than Figure 8. As Zimbabwe was able to increase its agricultural land more than Zambia, Zambia’s agricultural progress (in terms of productivity) has been even stronger than just looking at agricultural progress (in terms of value added by agriculture).

**Figure 9: Land productivity (value added of agriculture in current US$/agricultural land) in Zambia and Zimbabwe, 1970-2009**

![Graph showing land productivity](image)

Source: Created and calculated by author based on the data of the World Bank (2013) for the value of agriculture (in current US$) and agricultural land (in sq. km).

IV.4. Food Imports and Food Exports

The two panels of Figure 10 show food imports as a percent of merchandise imports and food exports as percent of merchandise exports, respectively for Zimbabwe and Zambia. Given that a country’s total merchandise imports are not identical to a country’s total merchandise exports, the comparison is a bit distorted for each country, but the huge difference across the two countries in terms of levels and trends for food imports and food exports is still illustrative of Zimbabwe’s agricultural problems and Zambia’s recent progress.

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From 1970 to 2011, agricultural land increased from 118 thousand square miles to 164 thousand square miles in Zimbabwe, while it increased from 199 thousand square miles to 234 thousand square miles in Zambia. Hence, the percentage increase in agricultural land has been higher in Zimbabwe (40 percent) than in Zambia (18 percent).
Figure 10: Imports and Exports of Food in Zimbabwe and Zambia (available years)

Source: Created by author based on World Bank (2013).

The data available from the World Bank (2013) for a) food imports and food exports (as a percentage of total merchandise imports and exports) and b) the value of merchandise imports and exports in current US$, allows us to calculate the net food balance, which we define simply as food exports minus food imports (both in millions of current US$). Given the difference in missing data for the two countries, Figure 11 focuses on the period since 1995. Consistent to the last few figures, it shows a strongly declining trend for Zimbabwe, while it shows a slightly positive trend for Zambia.

Figure 11: Net food balance (food exports minus food imports) in millions of current US$ for Zimbabwe and Zambia, 1995-2010

Source: Created and calculated by the author based on data provided by the World Bank (2013).
V. Descriptive Policy Analysis

V.1. Zambia’s Agricultural Policy

The main reasons for Zambia’s past inability to increase the value of its agricultural sector have been government intervention and mismanagement of international aid. Political parties in Zambia claimed they wanted to liberalize the agricultural market by deregulating resource allocation and commodity prices. The removal of price controls, the push towards greater exports, and the dissolution of state-owned enterprises that monopolized maize trade were believed to promote greater productivity and efficiency in the agricultural sector. Yet, repetitive government resistance to give up control of the agricultural sector deterred an efficient response from the private sector (Hill and McPherson, 2004) until more recently.

The limited and insufficient actions taken by the private sector were then taken as justification for government re-intervention into the matter. Repeated analyses of the impact of government interference have shown that it has constantly undermined development (Hill and McPherson, 2004, p. 317). Government involvement in the agricultural market has consistently generated instability in interest rates and confusion over adopted policies. The creation of structures such as the Food Reserve Agency (FRA), which was expected to absorb or release food in accordance to surpluses or shortages, have further disturbed the mechanisms of the agricultural market and imposed restrictions upon its growth (Hill and McPherson, 2004, ch.10).

Furthermore, until recently, Zambia has failed to efficiently utilize the donor aid it has been receiving. The Agriculture Sector Investment Program (ASIP) was created in an attempt to efficiently coordinate all donors’ efforts in agriculture. However, ASIP and similar sector investment programs (SIP) have failed because the administrative requirements of such programs were well beyond Zambia’s capabilities. Finally, until recently Zambia had been receiving regular food aid since the 1979 harvest failure. Food aid is only efficient if it is a short-term and an irregular addition to the national food supply. The constant presence of such a backup has discouraged the adoption of a broad-based strategy that would link agricultural performance with economic growth and food security.

However, as seen by the more recent increase in the value of the agricultural sector and in land productivity, Zambia has been able to develop its agricultural system in the past decade. Government support for maize research programs and the diffusion of technological research have contributed to greater yields of the crop. A tight monetary policy has allowed the country to lower inflation; market liberalization reforms have restrained government interference and provided inputs by farmers and new businesses. Finally, Zambia has also diversified its exports sector and holds further expansion potential as there is much arable land the country is still not utilizing.

In Zambia, land productivity has recently been increasing and it has been accepted that agriculture holds a potential to create employment that is unmatched by any other sector within the economy. Various studies (e.g. Hill and McPherson, 2004, Chapter 10) have also shown that in the production of high quality products, geography, market distance and isolation from international competitiveness have never been real constraints to the development of agriculture. Thus, it is up to the country to continue trade liberalization, to build up infrastructures to enhance regional development, and to increase investment into the agricultural sector to allow for the full potential of the sector to be revealed.
Finally, a last point to consider for the future progress of the agricultural sector in Zambia is the recent removal of farmer subsidies. This sum represents about US$200 million annually, which President Michael Sata has claimed would be better spent towards national health and education (IRIN, 2013b). These funds could also be redistributed towards the improvement of infrastructures, the expansion of markets and further investment in research. Currently, maize prices have been rising due to a) the removal of the subsidies, b) a rising demand for the crop in southern Africa, and c) a poor harvest. The higher price of maize, the main food staple for Zambia, has lowered national support for the policy.

However, subsidies are known to be expensive and unsustainable in the long term and the Zambian government might have taken an important step towards the long-term development and sustainability of agriculture (IRIN, 2013b). It will be important to follow the development and application of the policy, but it seems likely that the direct investment in national health and education will prove more beneficial than the subsidy of agricultural inputs in reducing poverty in Zambia.

V.2. Zimbabwe’s Agricultural Policy (since 2000)

The main reason for Zimbabwe’s continuing failure to increase agricultural production through its Fast Track Farms (FTFs), although progress is foreseeable, is a result of inadequate government support and land ownership uncertainties following the land reform. The primary indication that the reform would be an arduous process was the unfair redistribution of land towards elite farmers, investors, agricultural graduates or individuals who had gained social connections to either one these groups. Poor individuals and actual farmers were not selected as beneficiaries. The new landowners often happened to lack the skills set and experience the previous white farm owners had had. A second problem was the government’s failure to provide new farmers with the necessary services and inputs they required.

Concurrently, Zimbabwe suffered from the withdrawal of Western countries’ financial assistance, repeated droughts and violence from land transfers. Furthermore, while the land transfers were made in principle, there was no legal land tenure system drawn up and governmental compensation was denied in most cases. Without official title deeds, most landowners were and continue to be reluctant in investing into their farms because they fear arbitrary government seizure of their land.

A strong land ownership framework would not only promote investment into the agricultural sector, it would also allow beneficiaries to obtain loans, access input from private and international companies, and reduce national tensions over land ownership. The government has failed to respond to these demands because while it does want to liberalize the market place (as in Zambia) to absorb foreign and private investment, it fears such liberalization will lead to the reversal of its land reform. As a result, farmers have been given land but have been denied the legal rights and resources they need to efficiently exploit the land.

In Zimbabwe, the percentage share of agriculture in GDP as well as the value added by agriculture in current US$, has stagnated. Land productivity and food exports have fallen compared to pre-Mugabe levels. Within Mugabe’s thirty-four years reign (to date), Mugabe has organized manslaughter (such as in Mataleliland), eliminated much of his political opposition, greatly disregarded and abused human rights, and has starved and impoverished his people. An estimated 400,000 black Zimbabwean farmers were murdered under Mugabe’s government
(Crawford, 2013). Political and social unrest along with frequent demonstrations of violence have undermined the insignificant efforts made towards developing and ameliorating the agricultural sector.

VI. Conclusion

The Zambian Lands Act of 1995 converted customary land tenures into leasehold, attempting to liberalize land administration and strengthen property rights, with the goal of promoting foreign investment and national economic development. The 1975 Land Act was repealed, allowing for land to be privatized, and thus bought and sold. Foreign land ownership was encouraged and low-income Zambians were given the opportunity to acquire private land, which they could use as collateral to acquire credit and invest in their farms and businesses (Brown, 2004). Although the 1995 Lands Act may be considered unsatisfying on social standards, it raised agricultural productivity and output.

The Zimbabwean land reform (which is the biggest land reform to date in Africa), 245,000 Zimbabwean farmers replaced 6,000 white farmers (Hanlon, Manjengwa and Smart, 2012). Yet, this redistribution forced the displacement of about 350,000 people, while an estimated two million individuals never received land and were forced to chose between poverty and economic migration (mostly to Botswana and South Africa). The fast-track land reform was declared complete in 2002 by President Mugabe, but agricultural output has significantly fallen from colonial levels, forcing the country to import the food it exported three decades ago. Today, Zimbabwe is on its thirteenth year of consecutive food deficits and the loss in agricultural output has contributed to a rising debt obligation and the further constraint of the government’s capacity.

Despite the differences in land reform, both countries continue to suffer from decrepit educational and health sectors. Zambia’s educational system remains inefficient and inaccessible to many, although there is hope that the recent authorization of private funding will allow the system to develop and reach a greater number of Zambians. In Zimbabwe, educational infrastructures have crumbled, teachers have left, educational resources have been depleted and the quality of the system has plundered. It remains to be seen whether ETF funding will push the government to efficiently revive the system.

Zambia and Zimbabwe have some of the world’s lowest life expectancy rates and among the world’s highest HIV prevalence rates. The inadequacy of the education systems has greatly contributed to the spread of the epidemic, while the near invisibility of state funding of health services has exacerbated the loss of human potential. Education has a strong link with poverty reduction and it must be a priority for both countries to provide more educational resources. Sustainable economic and social progress will be favored from the development of the educational system.

Zambia and Zimbabwe must invest in the education and health of their citizens. While the sum of all international aid the countries ever received should have been enough to establish sustainable and efficient systems, corruption, inadequate administrative capacity and the need for aid to be re-distributed towards short-term sustenance have decreased the efficacy of such funding. In the case of Zimbabwe, mass murders, economic dislocation and political upheavals can be added to the list of disturbances that have hindered the country’s development. The main lesson to be taken away from Zimbabwe’s land reform is its absolute failure to increase the sector’s value and productivity. While on principle the redistribution of land based on its uneven
ownership by white farmers sounds just, the government failed to provide the legal structure and financial support needed.

References


The Impact of Climate Change on Coffee Production in Colombia and Ethiopia

Joel Iscaro

Abstract

This article seeks to address the ways that climate change impacts Colombia and Ethiopia. It directly focuses on the effect of climate change on coffee production, a major part of each nation’s economy. This article comments on the differences and similarities for the two countries in how climate change affects their coffee production. It looks at the issues that arise for coffee production because of changes to the global climate. Specifically, it focuses on the increase of coffee leaf rust and the drastic population increase of the coffee berry borer, an insect that feeds on the berries of coffee plants and negatively impacts worldwide coffee production. This article also examines several possible steps Colombia and Ethiopia could take to limit the damage of climate change on coffee production. It also analyzes what steps Colombia and Ethiopia are currently taking and what other possible solutions the nations could consider.

I. Introduction

After oil, coffee is the most internationally traded commodity in the world; consumers from all around purchase and enjoy coffee on a regular basis. The economies of many countries depend upon coffee production for stability and growth. New studies have found that Coffea arabica—the plant that almost all coffee is made from—may go extinct by the year 2080. Climate change already had (and will continue to have) a severe and negative effect on coffee production throughout the world.

In Colombia, an increase in rainfall threatens the health of these coffee plants. In Ethiopia, rapidly increasing temperatures kill the plants at an alarming rate. In both of these nations, pests and disease that target coffee plants have risen in prevalence. Unless action is taken to slow down climate change or find alternative ways to keep coffee plants alive, these two countries will be in danger due to the importance of coffee production for their economies. Some possible actions that would limit the negative impact of climate change include the migration of coffee plants to cooler altitudes, increased funding to protect the plants, and the implementation of shade trees to block the sun.
II. Brief Literature Review

As climate change becomes a more spotlighted issue in the international community, research about its impact rapidly increases. Climate change is predicted to have a variety of negative effects; one negative impact is that it can drastically hurt crop productions. Researchers say coffee plants are especially vulnerable to climate change because the majority of coffee is grown in developing countries. Ethiopia and Colombia depend on coffee production as a major part of their economies, but climate change will cause many problems for them. What follows are some selected works that discuss elements of this issue.

- Deressa (2007) of the World Bank completed an extensive study of Ethiopian agriculture. The study concluded that increasing temperatures and decreased precipitation, due to climate change, will have a long-lasting negative effect on Ethiopian agriculture. Agriculture is the most important part of Ethiopia’s economy because about 85 percent of Ethiopians depend on agriculture for employment. It has diverse agriculture with a mix of crops and the largest population of livestock in Africa. Stimulants such as coffee are major cash crops in Ethiopia. Some problems that hurt Ethiopian agriculture include drought, insects, disease, and low levels of technology. Climate change will lead to higher temperatures; developed countries can benefit from the higher temperatures for their agriculture. Developing countries like Ethiopia will suffer because their agricultural technology cannot deal with the changes.

- Jaramillo et al. (2009) discussed that the coffee berry borer, *Hypothenemous hampei*, is one of the main insects that feed on coffee berries. It is one of very few herbivores that feed on coffee because it has tolerance for caffeine. Their research discovered that population growth of *H. hampei* has an exponential relationship with temperature increases. As temperatures rise, the population of coffee’s main predator drastically increases. Colombia will face severe consequences from this because its wet climate leads to coffee berries being around yearlong. Ethiopia has a dryer climate, so its coffee berries are only seasonal. This gives *H. hampei* less food and a lower chance of survival.

- Davis et al. (2012) published their research on the effect of climate change on the *Coffee arabica* plant. Their research proved that the plant’s growing success is directly linked to accelerated climate change, but there is a profoundly negative trend in this relationship. At best, they predict there will be a 65 percent decrease in Arabica production by the year 2080. At worst, they say there will be a 100 percent decrease by 2080. Ethiopia, which is the main African coffee producer, will face serious consequences since coffee exports account for about 33 percent of Ethiopia’s export revenue.

- Ramirez-Villegas et al. (2012) studied the way climate change will impact Colombia. They say if Colombia does nothing to stop the impact of climate change, it will impact 80 percent of crops and 60 percent of cultivated land. Flooding, increased temperatures, reduction in land fertility, new pests, and diseases threaten crops as a result of climate change. Their research cites coffee as the highest value crop in the nation. Possible solutions to lower the impact of climate change on coffee is to shade the areas where coffee is produced and moving coffee production to higher elevation where there are cooler temperatures.
III. Empirical Background

III.1. Socio-economic Background of Colombia and Ethiopia

Colombia is an upper middle-income country located in northwest of South America. In 2012, the country had a population of 48 million people, and its gross domestic product (GDP) in current US$ was $370 billion. In 2011, 34.1 percent of the population lived below the national poverty line. Life expectancy at birth was 74 years in 2011.¹

Ethiopia is a low-income country located in the east of Sub-Saharan Africa. In 2012, the population of the nation was 92 million people; and its GDP in current US$ was $30.2 billion. As of 2011, 29.6 percent of the citizens of Ethiopia lived below the national poverty line. Life expectancy at birth was 62 years in 2011.²

Figure 1 shows GDP per capita of Colombia and Ethiopia in constant 2005 international $. With exception of the early 1980s and a sharp decline 1998 and 1999 and some stagnation during 2000-2002, Colombia’s GDP per capita grew continuously, increasing from $5,297 in 1980 to $8,860 in 2011. Ethiopia’s GDP per capita grew far less. Most of the 1980s saw actually a gradual decline, reaching a minimum of $432 in 1992 (which is a nearly 30 percent drop compared to the $599 in 1981). Over the subsequent 10 years, GDP per capita grew by about $120 (or an average annual growth rate of 2.6 percent). Only since 2004 saw Ethiopia substantial growth rates, reaching a GDP per capita of $979 in 2011.

Figure 1: GDP per capita (constant international $), 1980-2011

Source: Created by author based on World Bank (2013).

¹ World Bank (2013).
² World Bank (2013).
Both Colombia and Ethiopia are similar size countries in terms of land area. Despite their similar land size, Ethiopia has almost twice the population of Colombia (World Bank, 2013). Furthermore, while the percentages living below the national poverty lines (29.6 percent in Ethiopia, compared to Colombia’s 34.1 percent) seem to indicate that poverty is more severe in Colombia, the level of these national poverty lines are very different. Ethiopia is obviously much poorer than Colombia.

Consistent with the huge difference in income per capita, Figure 2 shows how life expectancy at birth has been and remained much higher in Colombia than in Ethiopia. Figure 3 shows that the adult literacy rate is also higher in Colombia than Ethiopia. Obviously, since these two nations are from different economic brackets, the health and education opportunities are drastically different.

**Figure 2: Life expectancy in Colombia and Ethiopia 1970-2011**

![Life expectancy graph](image)

Source: Created by author based on World Bank (2013).

**Figure 3: Literacy rate in Colombia and Ethiopia, available years**

![Literacy rate graph](image)

Source: Created by author based on World Bank (2013).
III.2. Worldwide Coffee Trade

Coffee has proven to be one of the most important crops in the world due to the sheer magnitude of its trade. In fact, a study from the Royal Botanic Gardens performed by Davis et al. (2012) explains that coffee is the second most traded good in the world. The most traded good is oil. From 2009 to 2010, coffee exports totaled about US$15.4 billion. During those years, 93.4 million bags of coffee were shipped throughout the world (Paramaguru, 2012). Over 100 million people depend upon coffee production for their livelihood (Paramaguru, 2012).

Davis et al. (2012) point out that two main species of coffee make up the majority of coffee trade. *Coffea arabica* and *Coffea canephora* contribute the largest to worldwide coffee production. However, 70 percent of all coffee produced commercially comes from Arabica coffee. Arabica originated in Ethiopia and its wild variety currently only grows in Ethiopia, Uganda, and Kenya (Koebler, 2013). Its cultivated form is grown throughout Africa and South America (Koebler, 2013). The cultivated, commercial form of Arabica coffee lacks genetic diversity, which makes it especially prone to diseases (Paramaguru, 2012). Current climate change predictions say the wild form of Arabica coffee could go extinct by 2080 (Paramaguru, 2012). Without the wild form of Arabica coffee—which accounts for over 98 percent of the coffee gene pool—no adaptations to the commercial form can be made. This could be disastrous if commercial Arabica experiences as many problems as researchers say it will.

For optimum growth and taste, Arabica coffee needs to be in an environment of about 18 to 21 degrees Celsius. Being exposed to temperatures of about 23 degrees or higher can cause the coffee plants to ripen, which negatively affects the taste and quality. Arabica coffee is a unique species because of its climate sensitivity (Davis et al., 2012).

Since Arabica coffee has such picky temperature requirements, climate change could lead to disastrous impacts on the worldwide coffee industry. Jaramillo et al. (2009) state that even the smallest increases in temperature could cause extensive damage to coffee production. They estimate that if climate change continues on its current trend, the suitable land for growing coffee could face a reduction by up to 95 percent. Most coffee is grown in the tropics, which face severe threats of extreme climate change (Jaramillo et al., 2009). Coffee production already is feeling the impact of climate change.

Between the years 2009 and 2011, the prices of Arabica coffee increased by 160 percent (Jaramillo et al., 2011). Many factors contributed to the skyrocketing of prices worldwide. Productivity decreased in East Africa and Latin America, the main locations of coffee production. Jaramillo et al. (2011) explain that Colombia in particular faced a decrease between these years due to extreme weather disasters that hurt coffee plants, as well as outbreaks of pests and diseases that attack Arabica plants.

If climate change continues as predicted, coffee production and trade will face difficult situations. The International Coffee Organization says climate change will lead to large reductions in coffee production. They predict that the biggest declines will occur in Africa and South America (Jaramillo et al., 2011). They predict this will affect coffee prices and force them to rise even more. Ramirez-Villegas et al. (2012) say that to protect coffee and coffee prices, greenhouse gases must be limited and reduced. Possible ways to limit greenhouse gases include a reduction in deforestation and better crop management (Ramirez-Villegas et al., 2012).
IV. Discussion

IV.1. Colombia: Agriculture and Climate Change

Colombia depends highly on agriculture. In this South American nation, at least 3.7 million people depend solely upon agriculture for their jobs and livelihoods (Ramirez-Villegas et al., 2012). Over a fifth of the nation works in the agriculture sector and a large share of its GDP comes from agriculture production. Of its many crops, coffee is one of Colombia’s most prominent. Ramirez-Villegas et al. (2012) say that in 2007, coffee accounted for 17 percent of Colombia’s total crop production. Coffee is the highest value crop in the nation. The majority of coffee production occurs on small, family-run farm plots (Martinez, 2012).

Colombia is at high risk for unprecedented climate change. If Colombia does not take any action to impede the rising temperatures, up to 80 percent of its crops will be in danger (Ramirez-Villegas et al., 2012). More than 60 percent of the farmable land would be negatively impacted by climate change, according to Ramirez-Villegas et al. (2012). Predictions say that at best, temperatures in Colombia will rise between 0.5 and 1 degree Celsius. At worst, temperatures could rise from 3 to 6 degrees. The average estimate is that temperatures will rise by about 2.5 degrees Celsius by the year 2050. If the predictions of Ramirez-Villegas et al. (2012) come to reality, it would have a disastrous impact on Colombian coffee production.

In addition to increased temperatures, the precipitation in Colombia will experience drastic changes. Annual precipitation will increase by 2.5 percent by the year 2050 (Ramirez-Villegas et al., 2012). High precipitation will lead to increased flooding, risk of salinization, and a reduction in the fertility of land. Ramirez-Villegas et al. (2012) calculate that Colombia will experience much dryer dry seasons and much wetter wet seasons each year. These changes would have a profoundly negative effect on crop production.

The 2007 report from the Intergovernmental Panel on Climate Change (IPCC) says climate change will lead to a loss of suitable environments for coffee growth in Latin America and the Caribbean (Ramirez-Villegas et al., 2012). It says climate change will lead to an increase in the coffee berry borer, the main insect threat to coffee. Ramirez-Villegas et al. (2012) reveal that in addition to the increased insect threat, diseases also could hurt coffee production in Colombia. Coffee leaf rust, known as *Hemileia vastatrix*, would hurt a large portion of coffee plants in South America.

IV.2. Ethiopia: Agriculture and Climate Change

Ethiopia strongly depends on the success of agriculture. Deressa (2007) found that 85 percent of the population in Ethiopia gets their job or livelihood from agriculture. Agriculture makes up around 50 percent of Ethiopia’s GDP. Of its diverse range of crops, stimulants such as coffee, tea, and tobacco are the major cash crops (Deressa, 2007). However, Ethiopian agriculture is prone to significant threats. Ethiopia’s agriculture depends on rain, so droughts cause considerable damage and often lead to famine (Deressa, 2007). Deressa (2007) also lists other dangerous stresses to Ethiopia’s agriculture. Biotic constraints in Ethiopia include weeds, insects, and disease. Abiotic constraints include drought, low soil fertility, water logging, and low levels of technology throughout the nation.

Specifically, Ethiopia depends on coffee production. The only type of coffee produced in Ethiopia is Arabica coffee (Davis et al., 2012). Davis et al. (2012) found that coffee makes up 33
percent of Ethiopia’s exports. Additionally, Ethiopia is the main producer of coffee in all of Africa. It is the 5th largest exporter of Arabica coffee globally (Davis et al., 2012).

Several studies have determined Ethiopia to be especially prone to the impacts of climate change over the coming years. Deressa (2007) said Ethiopia will experience an increase in temperatures but a decrease in precipitation. This will strongly damage Ethiopia’s agriculture. Jaramillo et al. (2011) predict that the changes in precipitation will be highly variable. From December through February, Eastern Africa could see a 5-20 percent increase by 2050. However, during the important farming months of June through August, rainfall will decrease by 5-10 percent by 2050. In addition, Africa will lose 60-90 million hectares of suitable land for agriculture by the year 2080 (Jaramillo et al., 2011), which is about 2 to 3 times the land area of Arizona.

Davis et al. (2012) predict that climate change will lead to a 65 percent reduction in suitable land for Arabica coffee growth. This is their best-case scenario prediction. At worst, they found that 100 percent of suitable land for Arabica coffee production will disappear due to climate change. They determined a negative trend between the increase in global temperatures and the growth of Arabica coffee (Davis et al., 2012). As temperatures increase, Arabica coffee production will decrease. This will negatively impact Ethiopia’s coffee industry. Davis et al. (2012) forecast that climate change will lead to increased threats to coffee production in southwest Ethiopia.

IV.3. Resulting Threats to Coffee: Coffee Leaf Rust and Coffee Berry Borer

Climate change in South America and East Africa has had many negative effects on agriculture, specifically coffee production. One unforeseen result from climate change is the increase in predators for coffee plants. Arabica coffee does not have many natural predators. Coffee leaf rust is one danger to coffee growth that has emerged as a result of climate change.

Coffee leaf rust is a fungus that originated in Africa and Asia, but it now can be found in almost all coffee-producing regions (Koebler, 2013). The fungus has particularly damaging effects. In the 1860s, coffee leaf rust led to the obliteration of the entire population of coffee in Sri Lanka (Koebler, 2013). Farmers learned that moving to cooler regions at higher elevations could eliminate the presence of this fungus. However, the increasing temperatures and rainfall resulting from climate change has led to coffee leaf rust becoming prevalent at higher altitudes than it used to (Koebler, 2013). Coffee leaf rust has attacked Arabica coffee throughout South America and Africa.

Yet, another main threat to coffee has drastically increased in recent years directly resulting from climate change. The insect known as the coffee berry borer, Hypothememus hampei or H. hampei, is the biggest pest to coffee plants (Jaramillo et al., 2009). H. hampei is one of only a few herbivores that have the ability to detoxify caffeine. Therefore, the insect has no problem feeding on the berries on Arabica coffee plants and remains as the unopposed foe to coffee (Jaramillo et al., 2009).

Jaramillo et al. (2011) explain that the exact origin of the H. hampei is unknown. The bugs first came to Colombia in 1988 (Jaramillo et al., 2009). In Africa, research shows the insect probably originated as a predator to Coffea canephora, a lesser-used coffee plant that grows at lower altitudes and warmer temperatures than Coffea arabica (Jaramillo et al., 2011). With rising temperatures, the coffee berry borer could be forced to migrate to higher altitudes where Arabica grows, giving it a new diet on which it can thrive. Recently, populations of the coffee berry borer have increased throughout southwestern Ethiopia. Studies have determined that while climate
change has had many negative impacts on nature, the coffee berry borer has thrived with the rise in temperatures.

Jaramillo et al. (2009) found that the population growth of \textit{H. hampei} is directly and exponentially related to increases in temperatures. As temperatures rise, generations of the insect multiply. A study performed by Jaramillo et al. (2009) determined that a 1 to 2 degree Celsius increase in temperature would cause the \textit{H. hampei} to develop faster; this would lead to more generations per fruiting season. They found that increases of over 2 degrees Celsius would force the \textit{H. hampei} to migrate to higher altitudes. This explains the bugs’ shift from lower elevation where \textit{Coffea canephora} grows to the higher altitudes of \textit{Coffea arabica}.

Two years later, Jaramillo et al. (2011) looked back at their predictions. They found that their predictions were holding true. Over the coming years, they predict the climate of southwest Ethiopia will become more suitable for the coffee berry borer. Southwest Ethiopia is the main location of Arabica coffee production in Africa. Another prediction about the future of the coffee berry borer claims that the population increases will become drastic. Currently, about 1 to 4 generations are born each fruiting season, which refers to the time of year when Arabica coffee thrives (Jaramillo et al., 2011). At best, Jaramillo et al. (2011) predict this will increase to somewhere between 5 and 10 generations per fruiting season. At worst, they say the numbers could increase from 10 to 16 generations. This drastic increase in the population of coffee’s main insect predator will not help the already struggling coffee industry.

Jaramillo et al. (2009) calculate that Colombia will experience a devastating impact because of its precipitation. Colombia experiences yearlong precipitation and climate change is expected to increase this. This leads to more flowerings of Arabica coffee, thus creating more food for \textit{H. hampei}. Ethiopia will face problems as well, but not as much as Colombia because Ethiopia’s dry season will limit the flowerings per year (Jaramillo et al., 2009).

**IV.4. Moving Forward: Possible Stall Tactics and Robusta Coffee**

Climate change has different effects on developed countries versus developing countries. Deressa (2007) writes that if temperatures increase by 3 degrees Celsius over the coming years and precipitation increases by 10 percent, developed countries could see an increase in cultivatable land of up to 25 percent. On the other hand, these same changes would cause developing countries to lose an average of 11 percent of their cultivatable land (Deressa, 2007).

Both Colombia and Ethiopia must take several steps in order to prevent the damage on their coffee production. If no action is taken, worldwide coffee production will encounter enormous harm and the economies of both nations would greatly suffer due to their dependence on coffee exports. In order to limit the damaging effects of the \textit{H. hampei} and other diseases that target Arabica coffee, farmers need to monitor their crops more closely; they need to implement some form of an early-warning system, which will allow coffee to remain sustainable (Ramirez-Villegas et al., 2012). Ramirez-Villegas et al. (2012) also advocate that the governments of Colombia and Ethiopia must increase funding for research that could prevent the extinction of Arabica coffee.

In order to fight rising temperatures, several researchers argue that coffee plants should be moved to higher elevations where temperatures are usually a few degrees cooler (Jaramillo et al., 2011; Davis et al, 2012; Ramirez-Villegas et al., 2012). Unfortunately, this is not a highly feasible accomplishment. Jaramillo et al. (2011) say that in Colombia, Arabica coffee would
need to move 167 meters higher in elevation for every 1 degree Celsius increase. However, higher ground is limited in Colombia (Ramirez-Villegas et al., 2012) and Ethiopia does not have much adequate high altitude land for farming (Jaramillo et al., 2011). Davis et al. (2012) say that re-colonizing Arabica coffee plants in Ethiopia is not necessarily a good idea because it will take many years for the plants to become productive again, causing the coffee industry to take a severe hit.

Scientists seem to agree that the best way to preserve Arabica coffee is through the use of shade trees (Jaramillo et al., 2009; Jaramillo et al., 2011; Ramirez-Villegas et al., 2012). Shade trees planted near coffee plants have the ability to block out the sun’s impact on the plants. They create lower temperatures better suited for Arabica coffee plants. Jaramillo et al. (2011) say shade trees can cause a reduction in temperature by up to 4 degrees Celsius. With the widespread implementation of shade trees in Colombia and Ethiopia, the increase in the population of *H. hampei* could be about 34 percent lower than expected (Jaramillo et al., 2011). These relatively small steps could provide protection and stability to the struggling Arabica coffee plants.

Colombia and Ethiopia have responded to climate change issues in drastically different ways. Economically, Colombia is much better off than Ethiopia. It has significantly more resources to combat climate change. Colombia’s National Coffee Growers Federation is a group that works to develop new varieties of coffee plants that have increased disease resistance and are more adaptable to changes in temperature or rainfall (Martinez, 2012). Additional groups to protect Colombia’s coffee industry include: Climate and Development Knowledge Network; National Institute of Coffee Research; Universidad del Cauca; Universidad del Valle; Instituto de Hidrologia, Meteorologia y Estudios Ambientales (Martinez, 2012). The most prominent organization in Colombia to protect its coffee industry is Colombia’s Cenicafe research center (Koebler, 2013). This organization has created two strands of coffee rust-resistant beans, called Colombia Variety and Castillo (Koebler, 2013). For the past five years, the Colombian government has spent $1.4 billion to develop rust-resistant Arabica coffee plants. The government assists rural farmers and provides loans due to the high expense and difficulty of redoing farms so they are growing rust-resistant plants (Koebler, 2013).

Ethiopia has extremely limited resources and has no access to resources such as Colombia. Therefore, the nation will fall behind further-developed nations since it has no ability to protect its coffee industry. Colombia far surpasses other nations in terms of protecting coffee production.

Due to the increasingly bleak predictions of the future of Arabica coffee, some have suggested a new focus on the second-best brand of coffee: *Coffea canephora*, commonly called Robusta coffee. Robusta has higher caffeine content than Arabica; it mostly is used for freeze-dried coffee (Paramaguru, 2012). Unfortunately, Robusta does not taste as good as Arabica so coffee producers are hesitant to switch to Robusta (Koebler, 2013). Despite its lower quality, Robusta is more tolerant of climate change and heat; it does not depend as much on rainfall. Researchers are searching for ways to improve the taste of Robusta, but have been unsuccessful so far (Koebler, 2013).

V. Conclusion

Colombia and Ethiopia are exceedingly different countries experiencing the same dilemma. Both countries face the danger that climate change will permanently destroy one of the most crucial aspects of their economies: coffee production. Due to Arabica coffee’s specific requirements for
growth, even slight changes to temperature and precipitation could kill the plant. As a result of climate change’s impact so far, new threats have arisen in both Colombia and Ethiopia. Coffee leaf rust and the coffee berry borer are now a much more significant threat to coffee production than they ever were before.

Colombia has significantly more resources than Ethiopia. Colombia has already begun several initiatives to develop new types of coffee that will not face as dire consequences due to climate change. Ethiopia lacks the money and ability to do so. While both nations will struggle because of climate change’s attack on their coffee industries, it appears that Colombia will not be in as much trouble as Ethiopia. Colombia has the ability to take the necessary precautions to limit the damage of climate change, but Ethiopia cannot take these same steps. Currently, Colombia and Ethiopia are world suppliers for Arabica coffee. In a number of decades, Colombia may prevail over Ethiopia because of its potential to overcome climate change.

References


Jaramillo, Juliana; Mamoudou Setamou; Eric Muchugu; Adenirin Chabi-Olaye; Alvaro Jaramillo; Joseph Mukabana; Johnson Maina; Simon Gathara; and Christian Borgemeister (2013). Climate Change or Urbanization? Impacts on a Traditional Coffee Production System in East Africa over the last 80 Years. PLOS ONE, Vol. 8, No. 1, pp. 1-10; available at: http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0051815.

Jaramillo, Juliana; Eric Muchugu; Fernando E. Vega; Aaron Davis; Christian Borgemeister; and Adenirin Chabi-Olaye (2011). Some Like It Hot: The Influence and Implications of Climate Change on Coffee Berry Borer (Hypothenemus hampei) and Coffee Production in East Africa. PLOS ONE, Vol. 6, No. 9, pp. 1-14; available at: http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0024528.


Perpetuating a Vicious Cycle: The Causes and Effects of Poorly Educated Children in Sierra Leone

Rebecca O’Neill

Abstract

Sierra Leone is a developing country located in West Africa. Many people in Sierra Leone are living in poverty, partially due to poor education. This article discusses the reasons for poor attendance and low quality schooling as well as the effects of poor education, such as low literacy rates in adults. Furthermore, this article discusses how poor education and its causes perpetuate the cycle of poverty. In this article, the current strategies for promoting education in Sierra Leone are critiqued and other options for improving education are discussed. In conclusion, poor education is both a cause and effect of poverty in Sierra Leone and the improvement of education could be used as a tool to help break the vicious cycle of poverty in Sierra Leone.

I. Introduction

Sierra Leone is a country in Western Africa whose economy relies mainly on mining, particularly diamonds and rutile. It is a developing country with potential for economic growth as well as positive developments in health and education. From 1991 to 2002, Sierra Leone endured a violent and destructive civil war, causing over 50,000 deaths, a ruined infrastructure, about two million people displaced, and the devastation of many primary schools. Currently, the country has stabilized and made an effort to utilize their potential. However, about 70 percent of the Sierra Leone population still lives below the poverty line. In addition, many children are working instead of attending school and the schools that are open are dilapidated and lack supplies. These reasons, among others, contribute to the low quality education and low student

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3 Central Intelligence Agency (2013).
4 Central Intelligence Agency (2013).
attendance rates in Sierra Leone. Though education in Sierra Leone has improved since the end of the civil war, there are problems to be resolved.

This article discusses these unresolved problems and the reasons for them. First, the problem of low attendance and dropout rates will be examined, including investigating how poverty and Sierra Leonean culture affect these rates. Next, the problem of poor school quality will be explored, including how inadequate funds for schooling and increased enrollment affect the shortage of supplies, space, and teachers. In addition, this article will assess the effects of poor education on the population of Sierra Leone, such as how it affects employment rates, literacy rates, and poverty rates. Furthermore, the techniques and efforts currently in use to promote education will be analyzed and other ways to assuage poor education in Sierra Leone will be suggested. Overall, the article will discuss how poor education and its causes and effects perpetuate the vicious cycle of poverty.

II. Brief Literature Review

Many primary research articles focus on the multitude of problems with the education in Sierra Leone, discussing why there are low enrollment and high dropout rates as well as how the education and education system has very low quality. However, none of the articles focused on the effects of poor education, as will be done in this article. The following three articles and reports discuss the reasons behind the low quality of education and the low attendance rates.

The article, “The Out-of-school Children of Sierra Leone” by UNICEF (2008), argues that the main reason for children not being in school is poverty, but other factors, such as living situations (presence of parents), location, gender, religion, cost, teen pregnancy, and early marriage, also influence the low enrollment and high dropout rates. In support of this argument, UNICEF found that 52 percent of out-of-school children were orphans. In addition, many children, 87 percent, choose income-generating work over school due to the widespread poverty, claiming they would “rather work and get paid than sit in school and be hungry” (UNICEF, 2008, p. 4). UNICEF also lists several recommendations to the government of Sierra Leone to address the problems with education, such as targeting poor families for help with school costs, creating and enforcing child labor laws, providing children with sexual and reproductive health information, and creating incentives to attend school, perhaps by providing a free meal. UNICEF (2008, p. 7) insists that “education breaks the vicious cycle of poverty. It is the powerful weapon that vulnerable and marginalized children have to change their future.”

A “Report on Basic Education in Sierra Leone” was prepared by The Campaign for Good Governance (CGG) (2006). This report argued that simply increasing access to basic education, without addressing any other issues, would be completely useless. In addition, The CGG asserted that there were many problems with education in Sierra Leone, such as ineptitude, low standards of teaching and learning environment, corruption, and poor monitoring and evaluating of the educational systems. However, the article also argued that improvements of all these problems wouldn’t increase attendance rates. Instead, only the access to free, basic, quality education would make education meaningful to the children of Sierra Leone. The CGG then went on to analyze the supposed changes in the quality of education to find that the class sizes were still too large, there were still large dropout and male-female ratios, there were still very little supplies and space, there were still school costs, and the teachers were still unqualified. The Campaign for Good Governance then recommended several actions that could appease such disappointments.
The article, “Problems behind Education for All (EFA): The case of Sierra Leone,” by Mikako Nishimuko (2007) argued that the quality of education has been compromised because of the large and rapid increase in the number of students enrolled in school in Sierra Leone. For example, the increase in students caused much higher teacher-pupil ratios as well as a greater lack of adequate materials and space. In addition, Nishimuko insists that non-governmental organizations (NGOs) are absolutely necessary in order to supplement the government’s efforts to increase the accessibility and quality of education in Sierra Leone.

III. Empirical Background

Sierra Leone is a low-income country in West Africa, with about two-thirds of the people relying on agriculture, a very vulnerable and inconsistent resource, especially in Africa. Sierra Leone has recently gained stability after a brutal 11-year civil war. While hard data on poverty is scarce for Sierra Leone, the available data available for 1990 and 2003 indicates that the percentage of the population living below PPP-$1.25 a day had decreased from 62.8 percent to 53.4 percent. However, the percentage of the population living below PPP-$2 a day has slightly increased from 75.0 percent in 1990 to 76.1 percent in 2003.

As Figure 1 shows, Sierra Leone’s gross domestic product (GDP) per capita, expressed in constant 2005 international dollar, has been lower in 2010 than it was in 1980. It declined from $812 in 1980 to nearly half ($420) in 1999, after which it increased steadily to $742 in 2010. Comparing Sierra Leone’s GDP per capita with that of the average developing country in Sub-Saharan Africa (SSA) shows that it has been between half and two-thirds less in Sierra Leone.

![Figure 1: GDP per capita in Sierra Leone and Developing SSA, 1980-2010](image)

Source: Created by author based on World Bank (2012).

Currently, the majority of Sierra Leone’s population is young, with slightly less than half (43 percent) of the population being children, aged 0 to 14. Slightly more than half (55 percent) of the population is aged between 15 and 64. The evolution of Sierra Leone’s age structure is

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6 World Bank (2012).
7 World Bank (2012).
shown in Figure 2. The large percent of Sierra Leone’s population being children contributes to a high dependency ratio of 0.81. The demographic window of opportunity has just been opening for Sierra Leone in 2010.\(^8\)

**Figure 2: Age Structure of the Sierra Leonean Population**

![Age Structure of the Sierra Leonean Population](image)

Source: Created by author based on World Bank (2012).

Sierra Leone’s life expectancy is among the lowest in the world. An average person born in 2010 can expect to live slightly less than 48 years. As shown in Figure 3, this is about seven years less than an average person of developing SSA. Figure 2 also shows that most of the progress made in increasing life expectancy during the 1970s has been eliminated by the HIV/AIDS epidemic raging in Sierra Leone at least until 1995.

**Figure 3: Life Expectancies for Sierra Leone and Sub-Saharan Africa**

![Life Expectancies](image)

Source: Created by author based on World Bank (2012).

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\(^8\) World Bank (2012).
Another reason for a majority of young people in Sierra Leone is the high fertility rate of about 5 children per woman. As shown in Figure 4, historically, fertility has been lower in Sierra Leone than the average developing country of SSA. However, due to the progress in SSA in decreasing fertility, SSA’s fertility rates reached that of Sierra Leone in 1996, after which it remained slightly higher in Sierra Leone than in developing SSA.

**Figure 4: Fertility Rates in Sierra Leone and Sub-Saharan Africa**

![Fertility Rates Graph]

Source: Created by author based on World Bank (2012).

**IV. Discussion**

There are several causes and effects of poor education in Sierra Leone. The majority of the causes of poor education are a result of poverty, and the effects of poor education then create and perpetuate more poverty. The causes and the reasons behind these causes will be explored as well as the devastating effects. The causes for poor education include (1) low attendance rates and (2) poor quality of school systems, and (3) the effects of poor education including low literacy rates and poverty.

**IV.1. Low Attendance Rates**

Low attendance rates at school include enrollment, dropout, as well as daily attendance rates. Since the end of the civil war, the enrollment rates have significantly increased, but are still relatively poor. First, only about 6 percent of children attended pre-primary school in 2011, meaning very few children got the foundations for learning and education. On the contrary, as shown in Figure 5, the primary school enrollment rate is high for males but much lower for females. However, the completion rate for primary school is only about 71 percent for females.

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9 World Bank (2012).
and 76 percent for males. Secondary school enrollment (shown in Figure 6) is about one third of primary, and tertiary school enrollment (Figure 7) is just a few percent.

In addition, 16 percent of females and 15 percent of males must repeat primary school. These repeats and dropouts are a major problem because many children are not getting the basic skills for learning and education. Next, the enrollment rates for secondary school are drastically lower than for primary school, with only about one third of children enrolling as of 2001. This statistic shows that many children are only getting a very basic education and are not or cannot pursue further education. Similarly, the enrollment rates for tertiary education as of 2001 were around 1 percent for females and 3 percent for males. This is an extremely low rate of young people following up on their education and shows that, in Sierra Leone, education is not a major priority or of value to most people.

Figure 5: Primary School Enrollment in Sierra Leone

![Primary School Enrollment (% Gross)](image)

Source: Created by author based on World Bank (2012).

Figure 6: Secondary School Enrollment in Sierra Leone

![Secondary School Enrollment (% Gross)](image)

Source: Created by author based on World Bank (2012).

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10 World Bank (2012).
In Sierra Leone, many children drop out or do not attend school for several reasons. First, many children must work rather than attend school. For many families, children are seen as another source of income and are forced into manual labor at a young age. In many situations, the children must either work or go hungry.

Similarly, many children cannot get an education because their families cannot pay for their schooling. In Sierra Leone, despite government action to reduce or eliminate costs associated

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with schooling, many schools still require monetary payment for services. This enduring cost is the main reason for children dropping out of school. Furthermore, 37 percent of the families that pay for their children to attend school say that they struggle to do so.\(^{14}\) Both of these reasons show that many children cannot attend school primarily due to poverty.

Another reason for low attendance rates in Sierra Leone, in addition to poverty, is teenage pregnancy and early marriage, much like in other parts of Africa. As of 2008, 34 percent of women between the ages of 15-19 had been pregnant or were pregnant at the time.\(^{15}\) Therefore, many young women are swooped into motherhood and out of school. Similarly, when a young girl enters marriage, often times she is no longer allowed to attend school and is restricted to household duties or work. Furthermore, the unmet need for contraception for married women between the ages of 15-49 in Sierra Leone is 27 percent, slightly higher than the average for Sub-Saharan Africa.\(^{16}\) This number, however, doesn’t include unwed women with an unmet need for contraception. Therefore, many women cannot prevent pregnancy in order to stay in school, contributing to the low attendance rates.

In addition to poverty and early marriage/pregnancy, living arrangements are another reason for poor attendance rates in Sierra Leone. In SSA, there is an overwhelming number of marginalized and invisible children, children without vaccinations, schooling, birth certificates, or homes, and Sierra Leone is no different, especially due to the civil war that displaced families, killed parents, and utilized child soldiers. These marginalized and invisible children are often homeless and cannot attend school due to a combination of the previously mentioned factors. Orphans are oftentimes part of the marginalized or invisible children.

In Sierra Leone, 52 percent of children who are out of school are orphans, proving that living arrangements and familial situations have a great impact on the ability of a child to get an education.\(^{17}\) In addition, one third of children who are out of school have 2 living parents, though in many of those cases the father is absent a majority of the time. Overall, children living with extended family or caretakers and children who are abused, exploited, or sexually harassed/exploited are much more likely to drop out or not attend school. Therefore, living arrangements can easily influence the role of education in a young person’s life.

Low attendance rates are caused by poverty, early marriage/pregnancy, and living arrangements. Low attendance rates are a main contribution to why children in Sierra Leone do not get a good education. By not attending school, children miss out on most learning opportunities and never receive vital tools for learning, critical thinking, creativity, or problem solving.

### IV.2. Poor Quality of School Systems

The poor quality of school systems encompasses the low quality of teachers, lack of supplies, lack of space, and low quality school buildings. All of these factors affect the learning environment of the children, who already have a difficult enough time attending school. Many of the inadequacies of the school systems stemmed from the rapid increase in enrollment of children after the end of the civil war.\(^{18}\) Though this increase was a positive development, it also

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\(^{14}\) UNICEF (2008).
\(^{15}\) World Bank (2012).
\(^{16}\) World Bank (2012).
\(^{17}\) UNICEF (2008).
\(^{18}\) Nishimuko (2007).
created higher pupil to teacher ratios and supply and space shortages. The larger pupil to teacher ratio means that each student receives less personalized learning time with the teacher. One-on-one time with the teacher can often be a very important part of learning and understanding. Without as much one-on-one time, a student could fall behind or feel lost, hindering the learning of basic, essential skills. In addition, larger classes mean more distractions and make it harder for the teacher to teach, especially if the students are on all different learning levels.

**Figure 9: Pupil to Teacher Ratios in Sierra Leone**

![Pupil-Teacher Ratio](image)

Source: Created by author based on World Bank (2012).

Moreover, a large pupil to teacher ratio becomes even more detrimental when it is analyzed in conjunction with the fact that many teachers are not properly trained. The availability of teachers is so low that many school systems must resort to hiring unqualified people to teach. Untrained teachers further hinder learning in Sierra Leone. Untrained teachers may not be teaching correct material, they may not know how to handle large classrooms of children, and they may not know how to teach in different ways to accommodate different learning styles. If the teachers are native Sierra Leoneans, there is also a great chance that they did not complete primary school or attend secondary or tertiary school. Overall, teachers are trained for a reason and the use of untrained teachers hurts the quality of the education that the children and their families work so hard to acquire. As Figure 10 shows, the percentage of trained teachers has actually decreased drastically from 2001 to 2011 in Sierra Leone’s primary schools.

Another major obstruction on the path towards education is the scarcity of supplies, such as paper, books, and writing utensils. Increases in the number of children enrolled in school and a stagnant amount of supplies result in deficiencies that have yet to be mitigated. Without textbooks and other writing materials, how can children learn to read or write? Having many students and one teacher, probably untrained, already creates a struggle to learn, and a lack of supplies is just adding to this struggle to learn. With so many factors pushing against them, it is easy to understand why children chose other paths. These children and their families must make huge efforts in order to keep the child in school, yet these children receive so little in return.
Even with the children having to pay to go to school, it is still not enough to create higher quality schooling. Many of these inadequacies are a product of government failures, primarily government spending on education. After the government stabilized after the war, however, the government did build over 600 schools. This was a step in the right direction, but it was not enough to fix all of the problems in the school systems. The government does not spend enough money on education. As of 2012, the government was only spending slightly over 3 percent of Sierra Leone’s gross national income (GNI) on education. Resource must be taken from another area and distributed into education in order to create higher quality schooling in Sierra Leone. Simply building more schools will not erase the problems with lack of supplies and trained teachers.

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Inadequate government funding leads to supply shortages, untrained teachers, high pupil to teacher ratios, and the general low quality of the school systems. It is already hard enough for children to attend school to begin with. These inadequacies exacerbate the problems with education in Sierra Leone. Children cannot learn without the proper materials or teachers. Children also need better learning environments. With these inadequacies, the children who attend school are almost as disadvantaged as those who don’t attend school. Therefore, the children who are able to attend are not learning as fast or as much as they should be. For this reason, the quality of education in Sierra Leone is extremely poor.

IV.3. Effects of Poor Education

There are multiple effects of poor education in Sierra Leone. First, the people of Sierra Leone do not learn basic skills, such as reading, writing, problem solving, math, and many other skills. Data for Sierra Leone’s literacy rates are only available for 2004 and 2009. As shown in Figure 12, though they have increased during these five years, they are with only 30.1 percent of females over 15 being literate, and 52.7 percent of males over 15 being literate, still very low, and nearly 20 years below below the average of SSA country for the same year. Low literacy rates then perpetuate poverty and affect employment, as well.

Figure 12: Adult Literacy Rates in Sierra Leone, 2004 and 2009

![Bar chart showing female and male literacy rates in Sierra Leone, 2004 and 2009.](source: Created by author based on World Bank (2012).)

Illiterate adults are at a disadvantage if they have to interact with government or other types of businesses. They cannot read the government laws or newspapers and, therefore, they can be easily manipulated or taken advantage of. Furthermore, illiterate adults who cannot afford to send their children to school cannot even teach their children basic reading or writing, since they themselves cannot. This then perpetuates the cycle of uneducated people.

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\(^{20}\) World Bank (2012).
Another important effect of poor education is poverty. Without education, the young people of Sierra Leone cannot get higher level jobs. Instead, many people only have one option: manual labor, such as agriculture. This is not an ideal situation because agriculture and other such jobs are not waged or salaried like higher level jobs and can be negatively affected by weather, natural disasters, climate change, and other factors. In Sierra Leone in 2004, about 92 percent of people employed were working in vulnerable employment.\footnote{World Bank (2012).} This vulnerability creates more poverty.

However, if a child was well educated, he or she could find a higher level, and thereby more stable, job. This could lead to decreased poverty. The more children that are educated, the more that can get better jobs and contribute to businesses and government, perhaps creating urbanization and economic growth, as well. If these children were better educated and become involved in government, they could then use what they have learned to help other children get better educations and thereby decrease poverty on a larger scale. Essentially, education holds many possibilities for young children. However, the lack of education provides children with basically no way to help themselves escape poverty and dooms them to a life of hardship.

The effects of low quality education and uneducated children are overwhelming and widespread. Improving education can be a way to improve many other aspects of life in Sierra Leone, as well. The improvements must start with the children because they will carry it throughout their lives, passing those improvements on to their children. Children are our future and we must spend money now in order to educate them so they can create a more positive, healthy, sustainable future. If children do receive a better quality, more accessible education, then they can use education as a tool to help themselves and others to break the vicious cycle of poverty.

V. Conclusion

Overall, poor education is caused by low attendance rates and poor quality of school systems. Low attendance rates are caused by the need for children to work, too high of school costs, early marriage and pregnancy, and poor living arrangements. Poor quality of school systems is caused by supply shortages, high pupil to teacher ratios, and unqualified and untrained teachers. Poor quality education and uneducated children can lead to low literacy rates in adults and perpetuate poverty. However, education can be used as a tool to overcome the hardships of poverty and better education for all could be used to decrease the widespread poverty in Sierra Leone. In addition, improved education could lead to improvements in social equality, health, democracy and government, and citizen participation in economics.\footnote{Nishimuko (2007).}

Currently, there are several laws created by the government to try to mitigate the problems with low quality education. However, many of these laws are not being followed or enforced. Such efforts are not enough to solve the numerous problems associated with education in Sierra Leone. Similarly, simply building more schools assuages the lack of space. However, that is the only problem that was affected; the other problems are still present and detrimental to the educational system. Instead of trying to fix one problem at a time, the government must take a more holistic approach to target several factors at a time. In addition, the government must attack the problems at their roots, rather than their superficial fronts. In order to do so, the Sierra
Leonean government should work to create allies with Non-Governmental Organizations (NGOs) so that they can supplement the government funds to help improve education.\textsuperscript{23} Furthermore, the government must make a strong commitment to changing and improving the educational system. Some suggestions to improve education would be to help the poorest families with the schooling costs, enhance and strictly enforce child labor and child protection laws, to build schools in rural areas for greater accessibility, and to provide sexual and reproductive health information to prevent pregnancy or disease.\textsuperscript{24} Also, it is very important for the government to create an incentive for children to go to school. The government must stress the importance of education and make it worth their while, such as by providing a free meal during class to encourage attendance.\textsuperscript{25} Overall, education must be improved in order to provide children with a better chance at overcoming poverty and stopping the vicious cycle that has persisted in Sierra Leone for much too long.

References


\textsuperscript{23} Nishimuko (2007).
\textsuperscript{24} UNICEF (2008).
\textsuperscript{25} UNICEF (2008).
Differences in Poverty in the Dominican Republic and Haiti: Factors that Affect Growth

Kevin Werner

Abstract

This article examines poverty in the Dominican Republic and Haiti, which is of particular interest because these two countries share the same island. It will look at income poverty, and how poverty is related to economic growth. Then, it will look at some elements that might affect growth, such as history, education, health, and openness to trade. It will look at these factors as causes for differences in poverty between the two countries. The article recognizes that there are other factors that affect growth, but many scholars have argued that these four factors are important ones. Much of the examination will evaluate work done by previous scholars.

I. Introduction

The island of Hispaniola is shared by two countries, Haiti and the Dominican Republic. Despite historic ties and being bound together on the same island, today these two countries are very dissimilar economically. In terms of gross domestic product (GDP) per capita, Haiti is the poorest country in the Western Hemisphere and corrected for differences in purchasing power, an average person of the Dominican Republic is nearly nine times richer than an average person in Haiti. Low income is a major defining feature of poverty and it is directly influenced by economic growth.

This article will examine the key factors that have been argued to have affected the different growth experience in the Dominican Republic and Haiti. Following this introduction, the next two sections will provide a brief review of the literature and some empirical background. The fourth section focuses on four key factors that have been proposed to be responsible for the different growth experience: history, education, health, and trade openness. The last section provides some conclusions.
II. Brief Literature Review

Though there are many publications covering poverty in the Dominican Republic. There also are many publications that examine Haiti’s poverty. But there are only a few publications that compare poverty across the two countries. This brief literature review covers first two of the recent publications contrasting the two countries and summarize then one major publication covering poverty in each country.

- A paper by Jaramillo and Sancak (2009), which is published in the *IMF Staff Papers*, is entitled: Why Has the Grass Been Greener on One Side of Hispaniola? A Comparative Growth Analysis of the Dominican Republic and Haiti. It focuses more on economic growth differences than poverty differences, but considers economic growth to be a key dimension in reducing poverty. The paper features important comparative information. It looks at the differences in initial conditions between the two countries. It finds that conditions such as geography and historical institutions do little to explain why the Dominican Republic’s growth has been so much more rapid than Haiti’s. It points out that most of the conditions were very similar. The paper’s explanation for the difference rests in the policies pursued by both countries since 1960. It posits that structural growth policies, followed by political stability, have been the two most important factors in the Dominican Republic’s superior growth.

- Another publication covering both countries is a paper entitled “Divided Neighbors on an Indivisible Island: Economic Disparity and Cumulative Causation on Hispaniola” by Winters and Derrell (2010), published in the *Journal of Economic Issues*. It looks at the comparative history between the two nations. It points to some differences in the colonial institutions as laying the groundwork for current socioeconomic circumstances in the two countries. The paper also states that differences in post-American occupation leadership had an important impact on development. The article closes with a summary of poverty and development statistics and states that it is the historical differences between the two countries that have led to the present-day differences in human development and poverty. It makes a point to say that, while the Dominican Republic is better off than Haiti, it still faces great challenges.

- The paper by Pal Sletten and Willy Egset (2004) is entitled “Poverty in Haiti” and was published by the Fafo Research Foundation, a Norwegian international studies center. Given that this paper was published in 2004, it does not have the most up-to-date data. However, it remains highly relevant as it covers topics such as geographic distribution of poverty and how poverty affects different demographics. These pieces of information are not likely to have changed drastically and should still be relatively accurate. Additionally, due to political instability in the country, there may not be more current data on some of these topics.

- A major publication for the Dominican Republic is a Working Paper published by the World Institute for Development Economics Research (WIDER), authored by Pozo, Sanchez-Fung and Santos-Paulino (2010). It is entitled: Economic Development Strategies in the Dominican Republic. The paper argues that the Dominican Republic has been able to achieve economic growth and progress through a three-pronged development approach. The first is a diversification of the economy, including promoting industry and construction as well as tourism. This diversification has been coupled with
tax and tariff reforms and has worked in conjunction with the second prong. The second prong consists of the creation of economic zones that operate parallel to the primary economy. The special economic zones include free trade zones and tourism and have been able to operate with minimal government interference, in order to maximize growth. The tourism zone developed on its own out of the nature of tourism, while the free trade zone has been protected by internal tariffs from the rest of the domestic economy. The final prong instituted has been an opening of trade with the rest of the world.

III. Empirical Background

GDP per capita is one of the most basic and important indicators of any nation’s wellbeing. Though distorted by inequality, it shows the average income of a person living in the country. GDP per capita can be used as a general indicator of the overall economic situation of the average citizen. Despite some data gaps, Figure 1 shows a very severe difference in the level and evolution of GDP per capita between the two countries. It shows that income in the Dominican Republic has grown much more rapidly than in Haiti, and this has had a very important effect on poverty.

Figure 1: GDP per capita, available years

![GDP per capita graph]

Source: Created by author based on World Bank (2012).

There are many more aspects to income poverty than the over-simplistic GDP per capita; one of these aspects is poverty and extreme poverty measured in percent of people living below a certain income threshold. Though such data is sketchy at best for Haiti, its Poverty Reduction Strategy Paper (International Monetary Fund, 2009) shows that in 2001, 77 percent of the Haitian population lived on less than $2 a day, while 62 percent of the Haitian population lived on less than $1 a day. Furthermore, data from Sletten and Egset (2004, p. 9) show that in 2002-2003, 76 percent of the Haitian population lived on less than $2 a day. The Dominican Republic’s data for both poverty levels is more widely available and shown in Figure 2. Clearly, even when the Dominican Republic saw a spike in both poverty and extreme poverty in 2004, it never got close to its prevalence in Haiti. This data is a more direct indication of the low income in Haiti. It demonstrates that not only are many Haitians poor when compared to their
counterparts next door, but that extreme poverty is not a relatively rare occurrence like it is across the border; it is an everyday struggle for more than half the population.

**Figure 2: Poverty Headcount Ratios, available years**

![Poverty Headcount Ratios Graph](graph2.png)

Source: Created by the author based on World Bank (2012) and Sletten and Egset (2004).

It is important to note that this disparity is not due to differences in labor participation rates between the two countries. In fact, as Figure 3 shows (data availability starts with 1990), there has been very little difference between the two countries in regards to labor participation. As the Figure shows, Haiti had a higher labor participation rate than the Dominican Republic until 1999. During the first decade of the 2000s, the Dominican labor participation rate was about one percent higher than that of Haiti’s, though Haiti slightly overtook the Dominican Republic in 2010.

**Figure 3: Labor Participation Rates, 1990-2010**

![Labor Participation Rates Graph](graph3.png)

Source: Created by author based on World Bank (2012).
This means that the difference in extreme poverty comes from workers in Haiti being paid much less than workers in the Dominican Republic, and a part of this discrepancy in wages goes back to growth. In its 2000/2001 World Development Report, the World Bank (2001, p. 5) called growth “that vital component for long-run reductions in poverty”. If the country can grow, workers can be paid more. Hence, growth is key to poverty reduction.

Figure 4 shows the GDP growth rates for the two countries. Despite data gaps and a high volatility for both countries, it is clear that GDP growth rates have been much higher in the Dominican Republic than in Haiti. Though the Dominican Republic has fallen from the near-miracle growth rates of the early 1970s, it still has maintained relatively high rates. Even in the global fiscal crisis of 2008, growth was stronger than many developed countries. The graph also shows the Dominican Republic’s quick recovery, back to growth rates nearing eight percent.

![Figure 4: GDP growth rates, available years](image)

Source: Created by author based on World Bank (2012).

Haiti, on the other hand, has almost never had growth rates higher than the Dominican Republic. It also had a few years wallowing in negative growth rates, including a rapid fall in 2010 due to the Haitian earthquake of 2010. According to estimates, reported by Kenney (2010), damage costs from the earthquake will total higher than the nation’s GDP, and that future economic growth is likely to be 30 percent lower than it would have been without the earthquake.

**IV. Discussion**

Growth, then, is the main issue. The question centers on what factors have allowed the Dominican Republic to grow much faster than and much more consistently than Haiti. Various authors have considered many different explanations, including historical institutions, natural conditions, and policies instituted in the last half-century. Winters and Derrell focus on history, culture, and natural features as explanatory factors. However, Laura Jaramillo and Cemie Sanack (2009) dispute these findings. They believe policies since the 1960s have had a greater
effect on growth. Pozo, Sanchez-Fung and Santos-Paulino (2010) also provide arguments for economic policy being the source for the Dominican Republic’s recent economic growth.

IV.1. History

Winters and Derrell (2010, pp. 597-598) purport to look at “the influence of resource allocation choices, unique historical, political and cultural conditions, as well as foreign influence and the island’s place in the larger context of international relations.” In actuality, they mostly focus on history, with only minor additional focus on environment, resources, culture, and relations between the two countries.

They look at the course of history of Hispaniola in search of factors relating to today’s growth. Their first finding is that Spain imported far fewer slaves to its side of the island than did the French, which was “to lay the groundwork for social and class relations in both the DR and Haiti for centuries to come” (Winters and Derrell, p. 599). Next, they point to the Haitian reinstatement of the plantation economy after the revolt against the French as creating a “disjuncture between state and civil society” (Winters and Derrell, 2010, p. 600).

Winters and Derrell (2010, p. 601) then identify Haiti’s invasion of the Dominican Republic as a lasting point of tension between the two countries. After recognizing that both countries had similar experiences during the United States Marine Corps occupation of the early 20th century, the authors posit that the first Haitian leaders following the occupation was solely focused on increasing his own wealth, while the first Dominican Republic leader, Rafael Trujillo, was focused on bettering the country, “thereby accounting for the fork in the road of economic progress between the two republics in the post-war era” (Winters and Derrell, 2010, p. 605). Clearly, these authors find history to be one of the compelling causes for the disparity in growth.

However, the data we have seen does not support this. In the 1990s, GDP was not too different in the two countries, meaning that historical developments could not have had too large of an effect. Furthermore, Haiti did see some periods of high growth, namely the 9 percent growth rate in 1995. This means that historical factors did not put too strong of a restraint on Haitian growth. In addition, Jaramillo and Sanack (2009, p. 327) argue that “historical institutions of the Dominican Republic and Haiti were very similar leading into the 20th century, implying that this cannot fully explain the growth divergence.” They do recognize that policy differences between Trujillo and post-occupation Haitian leaders may have had some strong effects, but ultimately, historical effects on growth divergence are limited at best.

Winters and Derrell (2010, p. 606) also look other causes for the divergence. They point to higher rainfall in the Dominican Republic as one of these. They argue that higher rainfall has led to greater soil fertility. However, as Figure 5 shows, based on the World Bank’s (2012) data,1 Haiti actually had slightly higher rainfall than the Dominican Republic. In any case, given that both countries share the same island, slight differences in rainfall are unlikely a major cause for the divergence between Haiti and the Dominican Republic.

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1 Given that the World Bank’s data (which comes from the United Nations Food and Agriculture Organization (FAO)) average annual rainfall has been the same for every year data is provided, there is some doubt on the accuracy of this data.
Figure 5: Average Rainfall, 1970-2010

Jaramillo and Sanack (2009, p. 327) dispute this claim as well, pointing to earlier studies conducted in the 1940s that show little difference in rainfall. Winters and Derrell also claim that Haiti’s high population on less land has had negative economic effects, but Jaramillo and Sanack refer to several studies that show a link between high population density and higher growth rates. Additionally, Winters and Derrell (2010, p. 607) claim that a surplus of cheap Haitian labor in the Dominican Republic has been a reason for greater foreign direct investment, though they offer no statistical evidence to back up this claim. As mentioned before, the conclusion drawn by Jaramillo and Sanack (2009, p. 343) is that out of historical, environmental, and cultural concerns, the only the policies pursued post-occupation have had any effect. They spend most of their time looking at policies implemented by both governments since the 1960s.

IV.2. Education

Jaramillo and Sanack (2009) recognize the importance of education in helping both the Dominican Republic and Haiti grow in the 1970s. They point to curriculum reforms and secondary school enrollment, mainly in the Dominican Republic, as very important in growth (340-341). What they fail to do is recognize the importance of education in growth overall, not just the 1970s. Harvard University professor Robert Barro (2013) found that secondary education has a significant effect on growth. As Figure 6 shows, the Dominican Republic has had much higher rates of secondary education enrollment than Haiti. Figure 6 demonstrates the high and growing rates of secondary school enrollment in the Dominican Republic compared to the low rates in Haiti. This is one very strong explanation for the Dominican Republic’s growth.
Barro (p. 319) recognizes that although primary education itself does not have an effect on growth, it is “critical as a prerequisite for secondary education.” Thus, completion of primary school (shown in Figure 7) is a direct indicator of secondary school enrollment. The Dominican Republic has seen primary school completion rates surpass 90 percent in recent years, whereas, in the last year that data was available, Haiti’s completion rate was below 50 percent.

Barro (pp. 320-321) also finds that education quality is important in growth. His findings are based on test scores; however, he also recognizes that teacher-to-pupil ratio (shown in Figure 8) can be used as another measure of education quality.
Figure 8: Pupil-teacher Ratios, available years

Source: Created by the author based on World Bank (2012).

Though the data is sketchy, it shows that generally Dominican Republic teacher-to-pupil ratio is higher than that in Haiti, when data for Haiti exists. This shows that the Dominican Republic has had higher educational quality than Haiti, which is an important factor in economic growth.

Furthermore, it is important to note that the Dominican Republic government has been an influence in its nation’s superior education, as Figure 9 on public education spending as a percent of GDP shows. Again, data is limited but shows the general trend of greater government spending on education in the Dominican Republic. The government of the Dominican Republic has been more focused on education spending than the government of Haiti. This goes to the point made earlier: government policies of investing in education lead to better education, which leads to greater growth.

Figure 9: Public Spending on Education, available years

Source: Created by the author based on World Bank (2012).
IV.3. Health

Jaramillo and Sancak (2009) do not mention health in their analysis of Haitian and Dominican Republic growth. Similarly, Barro (2013) finds that life expectancy and infant mortality are not statistically significant in their relationship to growth. However, he also comments (p. 323) that “it may be worthwhile to consider additional dimensions of health capital, such as morbidity measures and more details on life expectancy as a function of age.” Despite these conflicting claims, the general agreement that health has an effect on economic growth is clear. A key part of greater health is greater spending on health. As shown in Figure 10, the government of Dominican Republic has shown greater investment in health over the last 15 years than Haiti’s government. In fact, in recent years, the Dominican Republic’s public health expenditure as a percent of GDP has nearly doubled that of Haiti’s.

![Figure 10: Public Health Expenditure (as percent of GDP), available years](image)

Source: Created by the author based on World Bank (2012).

In addition to public spending, the Dominican Republic’s overall health expenditure per capita has been higher, as shown by Figure 11. Thus, it is clear from Figures 10 and 11 that the Dominican Republic spends a much higher amount of money on health than Haiti does. This higher spending correlates with greater health (lower mortality) in the Dominican Republic, as shown in Figure 12.

![Figure 11: Health Expenditure per capita (current US$), available years](image)

Source: Created by the author based on World Bank (2012).
Clearly, both countries have seen falling adult mortality rates in recent years. This correlates with greater spending on health in both countries, especially in Haiti when the decline in mortality rate began to accelerate about the same time that spending on health began to pick up. The bigger picture, however, is that the Dominican Republic has significantly lower adult mortality than Haiti. One reason why this can correlate to greater growth is that workers live longer and are healthier longer, and thus are more productive.

Although Barro (2013) did not find life expectancy to be statistically significant in regards to economic growth, a study by David Bloom, David Canning, and Jaypee Sevilla (2004, p. 11) found that a one year increase in life expectancy contributes to an increase of 4 percent in output. Obviously, this would be hugely important for growth. The difference in life expectancy, shown in Figure 13, can offer a strong explanation for difference in growth.
The Dominican Republic has consistently had a life expectancy of about ten years higher than that of Haiti. Both countries have also seen consistently rising life expectancies, so based on the findings by Bloom, Canning, and Sevilla, they should each see their output increasing. Obviously, this has not been the case, but that could be because of other factors. Increases in life expectancy still correlate strongly with GDP growth. In a similar vein to education, the Dominican Republic spends more on health than Haiti, and thus surpasses Haiti in important health measures, which correlate with higher growth.

IV.4. Openness to Trade

In general, trade is considered very important to growth. Kraay and Dollar (2004, p. 22) say that “openness to international trade accelerates development: this is one of the most widely held beliefs in the economics profession.” Jaramillo and Sancak (2009) point to openness of trade as one of the reasons why the Dominican Republic grew quickly in the 1990s, and why Haiti grew in the 1970s. Jaramillo and Sancak (2009, pp. 341-342) also argue that the lack of openness to trade was partly due to a UN embargo in the 1990s contributed to Haiti’s declining growth rates. Furthermore, Pozo, Sanchez-Fung, and Santos-Paulino (2010, p. 1) argue that openness to globalization has been one of three prongs that have led to greater growth in the Dominican Republic. Based on these assessments, intuition would say that the Dominican Republic probably has a lower tariff rate than Haiti. However, as Figure 14 shows, this is not the case.

![Figure 14: Tariff Rates, 1997-2010](image)

Source: Created by the author based on World Bank (2012).

Though the Dominican Republic significantly reduced tariff rates in the early 2000s, Haiti still had a significantly lower rate. This seems to run in stark contrast to the conclusions drawn by Jaramillo and Sancak (2009). Despite the lower tariff rates in Haiti, however, Figure 15 shows that it is actually cheaper to import and export goods to and from the Dominican Republic. Data for costs to import and export are only available from 2005, but it can be inferred from the graph that Haiti had an even higher cost before data was available. This information seems to prove Jaramillo and Sancak’s point: while the Dominican Republic may have a higher tariff rate, it is more open to trade simply because it is cheaper to import and export. Part of the cheaper costs in the Dominican Republic could be due to superior infrastructure. For example, in 2001 (which is
the last year for which data was available) the Dominican Republic had double the percentage of paved roads in Haiti according to the International Road Federation.

**Figure 15: Cost to Import and Export (per container), 2005-2011**

![Figure 15](image)

Source: Created by the author based on World Bank (2012).

Another factor that could explain the difference in trade, despite the lower tariffs in Haiti, is access to shipping. As shown in Figure 16, the Dominican Republic, at least in recent years, has had much higher liner shipping connectivity than Haiti. This allows for imports and exports to be brought in and sent out much cheaper.

**Figure 16: Liner Shipping Connectivity Index, 2004-2011**

![Figure 16](image)

Source: Created by the author based on World Bank (2012).

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2 The Liner Shipping Connectivity Index captures how well countries are connected to global shipping networks. It is computed by the United Nations Conference on Trade and Development (UNCTAD) based on five components of the maritime transport sector: number of ships, their container-carrying capacity, maximum vessel size, number of services, and number of companies that deploy container ships in a country's ports. For each component a country's value is divided by the maximum value of each component in 2004, the five components are averaged for each country, and the average is divided by the maximum average for 2004 and multiplied by 100. The index generates a value of 100 for the country with the highest average index in 2004.
Another factor into the higher costs to export and import in Haiti is its high burden of customs procedures, which are consistently higher than that of the Dominican Republic. For example, on a scale of 1-7, with 1 being least efficient, the World Economic Forum (2012) scored Haiti’s burden of customs procedures as 2.4, whereas the Dominican Republic’s burden of customs procedures scored 4.3. Hence, it is clear that government policies beyond simply lowering tariffs have an effect on trade. Openness to trade has correlated with growth in the Dominican Republic, and this openness has been spurred by high-quality infrastructure and customs policies (as well as the other way around).

V. Conclusion

The data presented above paints a compelling picture: history and environment have not had a huge impact on the current divergence in growth (and thus poverty) in Haiti and the Dominican Republic; government policy is what influences growth. That means that government policy can help eliminate poverty. This has been shown through policies in education, health, and openness to trade. There are other factors that affect growth and poverty, but these three government policies have been shown to be very important.

Haiti can learn from the Dominican Republic in adopting policies that can help lift its people out of poverty. Although this is easier said than done, it should be encouraging to the people and the government of Haiti. It shows them that their fate is not inevitable. If they can work to invest in education, health, and trade infrastructure, they can shake off the shackles of poverty. Though they may have limited resources, investing those resources correctly can ultimately increase growth and reduce poverty. The discussion of this article also demonstrates to the Government of the Dominican Republic that they can continue to reduce poverty by using the right policies in regards to education, health, and trade.

References


