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Biome Breakdown: The Effects of Climate Change on Agriculture in Nigeria and Thailand

Cassandra Pendino

Abstract
This article analyzes how climate change affects the agricultural sectors of Nigeria and Thailand. It focuses on exploring three areas that are critical for agriculture: increases in precipitation variability, increases in long-term surface temperatures, and increases in extreme weather events. The paper shows that these three effects of climate change have widespread and destructive repercussions on agriculture. Based on the available data, Thailand has thus far experienced more significant effects than Nigeria. However, given Nigeria’s lower level of development, Nigeria is more vulnerable to climate change than Thailand. There are some options to alleviate the impact of climate change in both countries, but they do not constitute permanent solutions. Mitigating climate change is the only way to guarantee the food security of these two countries.

I. Introduction
Climate change is one of the most critical and widespread threat facing our world in the modern day. It is an issue ubiquitous in nature, touching every inch of the earth, affecting all species of life, and posing a threat to humans especially in developing countries. Agriculture, which is indispensable to humans, is exceptionally susceptible to climate change. Increases in temperatures and changing weather patterns can have serious and long-term adverse effects on agricultural output and the sustainability of agricultural locations, which subsequently decreases food supply and causes a potential crisis for the human population in many developing countries.

This article will discuss the effects of climate change on agriculture in Nigeria and Thailand. These two nations have been chosen particularly due to their differences in terms of income per capita levels and location. Nigeria is considered by the World Bank to be a lower middle-income country with areas of desert, semi-arid climate, and savanna, while Thailand is considered to be an upper middle-income nation with a tropical climate and high levels of precipitation. Nigeria is located on the west coast of Africa along the Gulf of Guinea, while Thailand is located in Southeast Asia as part of the Lower Mekong Basin. While both countries are major rice producers, Nigeria is one of the largest rice importers in the world, Thailand is one of the world’s largest rice exporters. This
article seeks to explore how, despite different environmental conditions and locations, climate change affects distinct regions in surprisingly similar fashions.

There are various ways climate change is affecting agriculture in these two countries. In this article, these changes are grouped into three categories: precipitation variability, increases in temperature, and changes in extreme weather events. Observational and statistical information will be presented for each country and the data will be compared and contrasted against each other. Following this introduction will be a brief review of literature. The third section provides some empirical background for both countries, while the fourth section provides the main discussion, before the last section offers some conclusions, including some observations on how each country’s level of development affects its ability to manage the effects of climate change on their agricultural sector.

II. Literature Review

The amount of available literature on the topic of climate change and agriculture in Nigeria and Thailand is relatively sparse. Furthermore, due to the dynamic nature of climate change, older literature becomes quickly outdated and obsolete. This limits the scope of usable data to the relatively more recent observations. This literature review focuses therefore on some major contributions made within the last ten years.

- Ajetomobi (2016) analyzes how extreme weather conditions affect the mean and the variability of the yields of eleven staple crops in Nigeria. Using advanced econometric estimation methods, the research involved the use of a pooled panel data of 36 Nigerian states and the federal capital territory of Nigeria over the period of 1991-2012.

- Neo (2012) delves deeply into the statistics of current and projected crop yields in Thailand and how specific environmental changes lead to them. All studies found that there is a 100 percent chance that crop yields will decrease over the entire country by 2100, but the rates at which these declines would occur varies based on study and location. In addition to these statistics, the effects of industrialization and manmade alterations on the environment, such as dams, are explored in detail. The most signification assertion stated in this article is that Thailand is specifically vulnerable to climate change effects compared to both the rest of the Lower Mekong Basin and the world.

- Oluwatayo and Ojo (2016) use yam production in Nigeria to illustrate how climate change is affecting crops in the area and how farmers are adapting to those changes. As most agriculture in Nigeria is rain-fed, Nigerian crops are more susceptible to variable weather and precipitation changes; the use of less sophisticated technology and indigenous techniques allows farmers to be more connected to their crops and take notice of environmental changes. Oluwatayo and Ojo provide suggestions on how to combat these changes and maximize crop yield.

- Wassmann et al. (2009) analyze examples of extreme weather events and climate variability in Thailand and how it affects rice productivity. Bringing tangibility to sheer facts and figures, the article discusses droughts, specifically that of 2004, extreme weather events, and heat stress that all have caused crop damages in the past. As rice is the most prominent crop in Thailand, Wassman et al. provide important data and insight into how climate change affects food production and the country’s economy, despite the article focusing mostly on rice.
Yamauchi (2014) discusses the impacts of climate change on agriculture and irrigation in the Lower Mekong Basin. The article is broad in scope, covering almost the entirety of the Southeast Asian mainland and discusses all proven effects of climate change on agriculture in that region. Some of the effects include: increased weather variability, increased evapotranspiration rates, shifting and intensifying of dry and wet seasons, all contributing to a decrease in crop yield. Yamauchi refrains from discussing yield declines in detail, but focuses more on the specifics changes in weather and climate.

III. Empirical Background

This section is structured into two sub-sections: the first sub-section provides general information on both countries evolution and level of development based on three indicators (income per capita, poverty, and life expectancy); the second sub-section provides some background on the agricultural sector in Nigeria and Thailand. Both sub-sections provide a basis for the later evaluations of the impact of climate change on each country.

III.1. Evolution and Level of Income per capita, Poverty, and Life Expectancy

Figure 1 displays purchasing power parity (PPP)-adjusted gross domestic product (GDP) per capita for Nigeria and Thailand between 1990 and 2014. Thailand’s PPP-adjusted GDP per capita increased from $4,298 in 1990 to $15,735 in 2014, with an almost steady growth rate over the last 25 years, excluding the drop in 1997 and 1998 due to the Asian crisis, and a period of some fluctuation between 2009 and 2012. Regardless, Thailand’s GDP per capita has more than tripled since 1990.

![Figure 1: GDP per capita in PPP, PPP in current international $, 1990-2014](source.jpg)

Source: Created by author based on World Bank (2016).

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1 Given that the initial levels of GDP per capita are very different between Nigeria and Thailand, Figure 1 displays Nigeria’s GDP per capita on the left vertical axis, while that of Thailand is measured via the right vertical axis.
Unlike Thailand, Nigeria did not experience much growth in GDP per capita until about 2003. Its PPP-adjusted GDP per capita remained almost stagnant from 1990-2003. It then jumped from $3,143 in 2003 to $4,129 in 2004, and then grew at a relatively steady rate, similar to that of Thailand. Overall, Nigeria’s GDP per capita nearly doubled from $3,030 in 1990 to $5,639 in 2014. In any case, Figure 1 exhibits the fact that Thailand’s population is much better off economically than Nigeria’s population.

Figure 2 displays the percentage of the population of each country that is living under $3.10-a-day.\(^2\) Thailand’s poverty headcount decreased from about 38.2 percent in 1988 to 13.9 percent in 1996, after which it increased slightly during the Asian crisis, but continued to decline shortly after. In 2012, only 1.23 percent of Thailand’s population lived below $3.10-a-day. Nigeria’s poverty headcount stands in stark contrast to that of Thailand. Its initial percentage of the population under $3.10 was recorded at 71.3 percent in 1985, and for the next eleven years, its poverty headcount grew, reaching a peak at 81 percent of the population in 1996. Since 1996, the percentage has been on the decline. It was last measured at 76.5 percent in 2009, which is higher than it was in 1985.

![Figure 2: Poverty Headcount Ratio (percent of population under $3.10-a-day)](image)

Source: Created by author based on World Bank (2016).

The average life expectancy within a population gives a general idea of the quality of life within that population. Figure 3 displays the average life expectancy at birth of individuals in total years from 1970-2015. In 1970, the average life expectancy in Nigeria was 41.2 years. This value grew slightly until 1983, when average life expectancy stagnated at about 46 years until 2002. In 2003, average life expectancy began to grow again, this time at a higher speed, ending at the average age of 53 years in 2015. In Thailand, average life expectancy stood at 59 years in 1970, growing swiftly, reaching 70 years in 1989. Average life expectancy then also stagnated, in the case of Thailand until about 2004, but began to increase again, finally reaching 74.6 years by 2015. While

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\(^2\)The value of $3.10-a-day was chosen because it is upper of the two international poverty lines (the other international poverty line being $1.90 a day, which would show an even larger discrepancy between the two countries).
the average life expectancy of individuals in both Thailand and Nigeria have increased greatly over the span of the last 45 years, life expectancy is significantly higher in Thailand, by over 20 years, and has been increasing at a higher growth rate. This indicates a higher quality of life in Thailand than in Nigeria, as life expectancy generally increases with greater levels of sanitation, more accessibility to medical facilities, a more civil political state within a country, and greater availability and quality of food.

**Figure 3: Average Life Expectancy at Birth (in years), 1970-2015**

Source: Created by author based on World Bank (2016).

### III.2. State of Agriculture in Nigeria and Thailand

To understand the implications of climate change on agriculture in two distinctly different environments, it is important to have some basic understanding of the agricultural sector in each country. The two most significant aspects in this respect are the share of agriculture in GDP and how technologically advanced agriculture is within a country. These factors demonstrate how economically impacted a nation will be by agricultural variation and how well equipped a country is to combat those variations.

Figure 4 exhibits what percent of each country’s GDP can be attributed to agriculture. This information is important as it illustrates how a disturbance or change in production of agriculture would affect the economy of the country and to what extent. Historically, Nigeria has been much more economically agriculturally based. In 1985, agriculture as percentage of GDP was at about 39 percent and greatly fluctuated in the years following, until reaching a peak in 2002 at 48.5 percent. From then on, it has been on the relative decline and is now at its lowest percentage of 20.2 percent of GDP being attributed to the agricultural sector. In Thailand, agriculture as a percentage of GDP was at a rate of 15.8 percent in 1985 and maintained this value until 1990, when it began to decline. From 1990 to 2014 the percentage of Thailand’s GDP attributed to agriculture fluctuated around 10 percent, ending in 2014 at about 10.5 percent. The significance of Nigeria’s economy being more agriculturally-based than Thailand is that if something were to negatively affect agriculture within the country, it would have a much larger effect on Nigeria than on Thailand.
Even though Nigeria is one of the largest producers of rice in Africa, it is also one of the largest rice importers in the world. Moreover, Nigeria is the largest producer of cassava in the world, grown predominantly by smallholders on small plots for local consumption. In the case of Thailand, rice is the far most important crop for domestic production as well as for Thailand’s agricultural exports. Thailand is the second largest exporter of rice in the world market. In addition to being an important crop for both countries, rice is very dependent on water and is especially vulnerable to climate change, particularly changes in precipitation.

Technology has an enormous impact on the agricultural production levels of a country. The invention and increased distribution of modern agricultural machinery and technology has been the most significant factor in the continued growth of crop yields around the world. Technology also affects how well farmers can adapt to weather system disturbances and other difficulties associated with climate change.

As can be seen in Figure 5, the number of agricultural machinery has increased steadily in Nigeria, while it has increased exponentially in Thailand. In 1970, Nigeria had 2,900 tractors, while Thailand had 7,000 tractors. Thirty years later, in year 2000, which is the last year such data is available for both countries, Thailand’s number of tractors (which stood at 439,139) has been more than 20 times higher than in Nigeria (which had 19,400 tractors in 2000). This clearly shows that Thailand’s farmers have more access to technology and are better assisted by machinery to produce crops quicker and easier. Nigeria does not have this luxury, and is therefore not as equipped to cope with climate disturbances as Thailand. Farmers in Nigeria will have to find alternative ways to sustain their current agricultural output.

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5 Ricepedia: The Online Authority on Rice (2012).
6 According to the World Bank (2016), agricultural machinery refers to the number of wheel and crawler tractors (excluding garden tractors) in use in agriculture.
IV. Precipitation, Temperature, and Extreme Weather Events

Climate change is a complex and multifaceted issue that has an innumerable amount of effects on the world we live in today. This section explores the three most significant issues climate change inflicts on their environments for which some data is available for both Nigeria and Thailand: increases in precipitation variability, increases in temperature, and changes in extreme weather events.

IV.1. Increased Precipitation Variability

One of the most significant misconceptions about climate change around the globe is that its effect on the environment is uniform and not varied in nature. An example of this is the popular belief that “global warming” simply implies a broad increase in temperate, while it actual leads to increase in temperature variability as well.\(^7\) This example is very similar to the concept of precipitation variability, increased changes in the nature of rainfall in an area. These changes include both increases and decreases in rainfall amount as well as the location and time of year during which precipitation is most common. This change in climate affects both Thailand and Nigeria, posing the most significant threat to the agricultural productivity of both nations.

In the simplest sense, increased precipitation variability constitutes changes in rainfall amounts or patterns of any kind. These changes in precipitation in Thailand can be seen in Table 1, which provides information on the variability of average amount of rainfall as well as the standard deviation of rainfall amounts. The comparisons made in Table 1 are between two collections of data: a baseline that includes values taken from data collected between 1985-2000, and a projection that includes data from 2010-2050, some of which is actual and some of which is predicted. It can

\(^7\) Vasseur et al. (2014).
be seen in Table 1, that while the percentage change in average annual rainfall remains relatively the same at a 1 percent, the standard deviation in annual rainfall (which measures the variability of precipitation) has increased significantly with a change of 13 percent.

**Table 1: Changes in Annual Rainfall in the Lower Mekong Basin**

<table>
<thead>
<tr>
<th></th>
<th>Baseline 1985–2000</th>
<th>CC-B2 2010–2050</th>
<th>Changes</th>
<th>% Of change to baseline</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Annual rainfall (mm)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average</td>
<td>1,619</td>
<td>1,642</td>
<td>23</td>
<td>1</td>
</tr>
<tr>
<td>Standard deviation</td>
<td>515</td>
<td>583</td>
<td>68</td>
<td>13</td>
</tr>
<tr>
<td>10% Exceedance</td>
<td>1,082</td>
<td>995</td>
<td>-87</td>
<td>-8</td>
</tr>
<tr>
<td>90% Exceedance</td>
<td>2,258</td>
<td>2,404</td>
<td>146</td>
<td>6</td>
</tr>
</tbody>
</table>

Source: Yamauchi (2014).

This increased variability has an enormous impact on the agriculture of Thailand. Changes in precipitation have a wide variety of repercussions on the weather and seasons, which cause issues for crops in terms of when to plant them, their growth, and their harvest. The most significant repercussion is the increased variability of the wet and dry seasons. This variability includes both a change in precipitation rates as well as times in which precipitation occurs. Changes in the amount of precipitation in an area cause an increase in drought and flood occurrences, which inflict extensive damage to crops and greatly reduces production. In the case of flood increases, crops will drown under inches of excessive and unpredictable rain. In the case of drought, which are projected to happen more frequently in the future, crops will dehydrate and die.

Furthermore, it is expected that there will be an increases in evapotranspiration rates. Elevated rates of evapotranspiration can cause heat stress to plants and increase drought risk further, which will call for more use and development of irrigation pathways. A shifting in the times at which precipitation will occur will move the start and end dates of the wet and dry seasons and causes changes to the planting cycle. However, due to the higher unpredictability of the seasons, farmers are uncertain about when to plant and transplant rice crops, a delicate process that is very dependent on the weather and precipitation rates. If rice is planted too early, rain may not come in time and the plants will die; if rice is planted too late, crops may not have finished their growing

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8 Yamauchi (2014).

9 Yamauchi (2014).

10 Yamauchi (2014).

11 Neo (2012).

12 Yamauchi (2014).
season by the time the wet season is over. This has the potential to greatly decrease crop yield, threaten the country’s food security, and hence cause damage to the economy of Thailand.

Although rainfall is much less frequent in the tropical savanna and arid desert climates of Nigeria, the country still suffers from many of the same issues that inflict Thailand in relation to precipitation variability, in some senses to a greater extent. Nigeria is also experiencing changes in precipitation that are already leading to both increases and decreases in the amount of rainfall as well as shifting of the wet and dry seasons all together. Increase in precipitation over a short period of time is arguably the most concerning change taking place as the soil in the area is not equip to deal with excess water so flooding occurs more easily. This flooding then leads to soil erosion and nutrient leaching, causing the land to become less arable and decreasing crop production in the short and long term. Too little rainfall, of course, causes droughts that are expected to be more severe than in the past. This elevation of occurrence and intensity of droughts and flooding puts a strain on water resources and food security.

Changes in the onset and cessation of growing seasons are also very important for agricultural output in Nigeria. As can be seen in Figure 6, the variability in the onset of the growing seasons has been increasing in recent years; it actually more than doubled from the 1980s to the 2000s. As Figure 6 shows, it varied between November 15 to November 30 during 1980-1990, while it varied between October 28 to December 15 during 2000-2010.

Figure 6: Mean Onset (straight line) and Yearly Onset (dotted line) of Growing Seasons in Ibadan, Nigeria, 1980-2010

These increases in variation cause many of the same problems seen in Thailand. Farmers cannot predict when to plant crops for optimal output and many plants end up dying due to droughts, which also have become less predictable and extremer. Nigeria is exceptionally affected by these

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13 Ufoegbune et al. (2016).
14 Ayinde et al. (2011).
changes as most of Nigeria’s farmland has no irrigation system and is almost completely dependent on the weather to provide water to crops, as opposed to Thailand, which has heavily irrigated land due to its extensive cultivation of rice. Due to this fact, Nigeria will most likely take a larger hit in the agricultural sector in the long-run.

IV.2. Increases in Temperature

While it is true that temperatures are on the rise around the world, certain regions are experiencing temperature changes in a variation of ways, and how those changes affect an area are specific to the location. While the global mean temperature increase has been about 0.8° Celsius (1.4° Fahrenheit) between 1885 and 1994, the average rise in temperature in Nigeria over the past 100 years has been about 1.1 °Celsius (C). Figure 7 displays the average recorded air temperature in Nigeria per year and clearly illustrates that temperatures have been on the incline, at least since 1905. This incline was rather steady until about 1970, when it began to steepen at a previously unprecedented rate.

Figure 7: Air Temperature in Nigeria from 1901-2005

Source: Odjugo (2010).

The effects of these temperature increases on crops are extensive. The most obvious impact is heat stress and a lack of water that can cause plants to become dehydrated, as the environment is no longer suiting their temperature needs. Evapotranspiration also increases as temperature increases; extended periods of drought combined with higher than usual temperatures causes these increased rates. These repercussions contribute to a decrease in crop yield and a threat to the food security of a nation that is experiencing hunger and starvation. Nigeria cannot afford these losses.

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15 World Bank (2016).
16 Carlowicz (2010).
17 Odjugo (2010).
18 Yamauchi (2014).
Thailand is also experiencing temperature increases above the global average. The mean minimum temperature in the country has increased by 0.8 °C and the mean maximum temperature has increased by about 1.2 °C. These escalations will not only continue, but at a higher rate than they have in the past. It is expected that by 2100, temperatures will have reached an increase of at least 2.5 °C, and up to 3.5° C in certain regions. These changes will have similar effects as those expected and already observed in Nigeria. Heat will put stress on vulnerable rice plants, causing dehydration and death. Evapotranspiration will increase greatly and the warm season will extend, causing crop cycling issues and less time in which to cultivate, grow, and harvest output. These factors will be limiting to production, especially the decrease in length of the planting season. This will have a significant economic impact on the whole country as rice is one of their largest exports, constituting nearly 10 percent of the country’s GDP.

IV.3. Changes in Extreme Weather Events

Ajetomobi (2016) examined changes in extreme weather, focusing on changes in extreme temperature and extreme rainfall. Concerning extreme temperature, Ajetomobi (2016) concludes that the average yields are negatively affected for cassava, cocoyam, cotton, millet rice, sorghum, yam and maize, while the impact on the yield of groundnut, cowpea and melon is positive. With regards to extreme rainfall, Ajetomobi comes to the conclusion that the average yields are negatively correlated for cassava, rice and sorghum, while the average yields are positively correlated for the other crops. However, in regards to the effects of total amount of rainfall over each crop growing season, the effect is negative for cotton and millet, insignificant for sorghum, yam, maize and melon, and positive for cassava, cocoyam, groundnut and rice.

Despite these mixed results on mean yields, Ajetomobi’s results show that both temperature and precipitation extremes can result in wide fluctuations of Nigeria’s crop production, which could make crop prices unstable, and hence, have a negative impact on Nigeria’s agricultural sector as well as for food consumers. As reported by Akinboade (2012), the Director General of the Nigerian Meteorological Agency had identified extreme weather conditions as the reason for Nigeria’s underdevelopment.

Given that Thailand experiences a monsoon season each year, Thailand is already prone to natural disasters. Yet climate change is beginning to cause changes within these natural weather cycles that aggravate the negative impacts on the country. In the past, monsoons provided a consistent and controlled inundation, which is the basis of paddy rice production. Disturbances to this system could have significant unfavorable consequences on agricultural output as well as the general environment of the country. In the last 25 years, Thailand has endured four of its most extreme flood events in history, occurring in 1992, 1997, 1998, and 2011. While floods are important to Thailand’s agricultural cycle, the intensification of floods due to changes in monsoon patterns and severity are harming agricultural production.

In Figure 8, each box represents a standard deviation away from the historical mean annual flood volume; floods or droughts one standard deviation away are considered “significant” while those two standard deviations away are considered “extreme”. The scatterplot shows that, with the

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19 Neo (2012).
20 Wassmann et al. (2009).
21 World Bank (2016).
22 Adamson and Bird (2010).
23 Adamson and Bird (2010).
exception of 1939 and 1955, all of the most extreme events are within the last 40 years. Most significantly, this graph does not include the massive floods of 2011, which were declared “the worst in history in terms of amount of water and people affected.”\textsuperscript{24} Climate change is also increasing instances of natural disasters such as typhoons, extreme tropical storms, and, as previously discussed, drought.\textsuperscript{25} Winds, heavy rains, and erosion could destroy fields of agricultural land leading to extensive losses. Predictions have been made that by 2030, the occurrence of extreme weather events will have escalated by at least 5 percent.\textsuperscript{26} Combined with rising sea levels that may cause mass inundation and salinity intrusion,\textsuperscript{27} Thailand could be looking at significant losses in not only active crops but arable land.

\begin{figure}
\centering
\includegraphics[width=\textwidth]{scatterplot}
\caption{Scatterplot of the Values of the Annual Flood Hydrograph, 1924-2006}
\end{figure}

\begin{center}
\begin{tabular}{c}
\hline
\textsuperscript{24} News Wires. \\
\textsuperscript{25} Adamson and Bird (2010). \\
\textsuperscript{26} Neo (2012). \\
\textsuperscript{27} Adamson and Bird (2010). \\
\hline
\end{tabular}
\end{center}

\section*{V. Conclusion}

As the human population continues to burgeon, efficient agricultural practices and maximum outputs become increasingly crucial. Yet, ironically, the same population so dependent on agriculture is causing the deterioration of the very system it requires so desperately. Human-
induced climate change is leading to precipitation variability, increased temperatures, and elevated occurrences of natural disasters that are threatening global agricultural productivity, more specifically the food security and economic productivity of the countries of Thailand and Nigeria.

Due to the differing economic statuses, poverty levels, and technological advancements of the two countries explored in this article, it is expected that the effects of climate change on agriculture will affect the two nations to varying extents. Of the two, by general definition, Thailand is the more advanced country. It has a higher income per capita, lower infant mortality rate, longer life expectancy, and higher literacy rate than Nigeria; all indicative factors of the advancement level of a nation. Due to its greater wealth and more educated and healthy population, Thailand will most likely be more capable of combatting climate change and alleviating its effects.

Nigeria, on the other hand, will bear the raw brunt of the effects climate change has on agriculture. With a large percentage of its population trapped in poverty and very little agricultural technology to employ, Nigeria has fewer options to contest its repercussions. These repercussions include reductions in food levels for the country’s population and decreased economic activity as a decline in agricultural output could limit stocks of exportable goods. While the effects of climate change on Thailand may be objectively larger in absolute terms, Nigeria will hurt more in relative terms.

While the impact of climate change on agriculture is extensive and rapidly impending in Nigeria and Thailand, some adaptations are available to mitigate the negative effects in both nations. Nigeria can shift its planting cycles and use mixed cropping systems. Thailand can expand irrigation and diversify its crop selection. However, none of these options provide permanent solutions. The only complete and absolute solution to the problems explored in this article is addressing climate change as a whole. For this is not a matter that can be conquered from country to country or issue by issue. Climate change is a multifaceted and complex obstacle that must be undertaken in its entirety. Steps can be taken to delay the inevitable, or steps can be taken towards permanent solutions. For Nigeria and Thailand, as well as the rest of the world, the decision is theirs to make.

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Microcredit in Bangladesh and Haiti:
Helping Poor Families to Overcome Poverty

Diane Kim

Abstract
Despite many critical assessments about the impact of microcredit on economic growth and poverty reduction, the overwhelming literature of Bangladeshi’s microcredit literature comes to the conclusion that if correctly applied, microcredit stimulates economic growth and reduces poverty by empowering women creating self-sustaining businesses. This article compares the microcredit sectors of Bangladesh and Haiti. It compares some key characteristics of the two countries’ microcredit sectors as well as the impact of disasters, government regulations, and corruption on each country’s microcredit sector. Despite serious governance issues, Bangladesh continues to be a model of microfinance and overall economic and social development, from which other countries, specifically Haiti, can learn from.

I. Introduction
According to the former World Bank President Robert McNamara, extreme poverty is a condition of life so limited by malnutrition, illiteracy, and disease as to be beneath any reasonable definition of human decency. Many people facing extreme poverty are unable to overcome poverty as they are excluded from taking loans from formal banks because they lack collateral and literacy. However, microcredit institutions provide access to credit for those ignored by the formal banking sector. When microfinance is done correctly, it is a major contributor to economic growth in developing countries as it provides income-generating self-employment for the poor, and hence, helps the poor to break the cycle of poverty.

This article reviews microcredit sectors in Bangladesh and Haiti, focusing specifically on the dominating microfinance institutions (MFIs) of each country. Bangladesh’s Grameen Bank is the world’s first MFI, founded in 1976 by the Noble Peace Prize winner, Dr. Muhammad Yunus. Eighteen years later in 1994, Fonkoze Financial Services, or otherwise known as Fonkoze was created in Port Au Prince, Haiti. Dr. Yunus is the pioneer of microfinance and Grameen Bank continues to be the model in reducing poverty in many developing countries and even in some industrialized countries. There are currently over 10,000 MFIs all around the world.

This article is structured into six sections. Following this introduction, the second section provides a brief literature review. The third section provides some empirical background on the evolution of economic and human development in Bangladesh and Haiti before the fourth section compares the microcredit sectors of Bangladesh and Haiti. The fifth section looks briefly into the impact of disasters, government regulations, and corruption, before the sixth section provides some conclusions.

II. Literature Review

There is a huge discrepancy in the availability of literature on microcredit in Bangladesh and Haiti. In the case of Bangladesh, there are currently more than 20 new publications per year, while there are barely a handful of peer-reviewed publications focusing specifically on microcredit in Haiti. Given this imbalance, this literature review is divided into two sub-sections. The first one summarizes six recent contributions to the Bangladeshi microcredit literature examining the impact of microcredit on savings, food security and women’s empowerment. The second sub-section summarizes the major formal publications focusing on microcredit in Haiti within the last ten years.

II.1. Recent Contributions to the Bangladeshi Microcredit Literature

Aktaruzzaman and Farooq (2017) and Nasrin, Baskaran and Rasiah (2016) are the two most recent publications examining the impact of microcredit on savings in Bangladesh. Aktaruzzaman and Farooq (2017) use a unique dataset collected from 69 villages in Bangladesh to estimate the effect of participation in microcredit programs on household savings. They use a fuzzy regression discontinuity design approach, which shows that access to credit increases savings of the borrowers.

Though using a different approach, Nasrin, Baskaran and Rasiah (2016) use the data from Microcredit Regulatory Authority database, which comprises 719 microfinance institutions (MFIs) from 2007 to 2012 to examine the impact of MFIs on the savings of the poor in Bangladesh. Their results show that MFI numbers and number of branches are positively associated with saving in the sector, which supports the institutional savings theory that posits that the availability of financial institutions shapes saving behavior of people.

There also are two recent publications that examine the impact of microcredit on food security in Bangladesh. Islam, Maitra, Pakrashi and Smyth (2016) examine how microcredit affects a variety of different measures of food security, including among others the household calorie availability and dietary diversity indicators. They find that participation in microcredit programs increases the calorie availability both at the intensive and extensive margins, but does not improve dietary diversity, and only has mixed effects on the anthropometric measures. They also find that the effect of microcredit participation on food security may be non-linear. Initially, the participation in microcredit programs has either no effect or a negative effect on food security. However, in the longer-run, participation in microcredit programs does improve food security.

Khandker and Koolwal (2016) use a recently augmented Bangladesh household panel data spanning over 20 years to examine the effects of rural credit expansion (both microcredit and formal bank channels) on outcomes for agricultural households. They find that microcredit has benefited households with lower land-ownings, raising agricultural income from activities such as livestock rearing that require less land, as well as nonfarm income diversification for all
households, but with the strongest effect for landless or near-landless households. While they do not find effects of microcredit on crop income, they do find that reported supply-side credit constraints significantly lower crop income. Furthermore, they find that while borrowing by both men and women has contributed to nonfarm income growth for marginal farmers, only men’s borrowing has contributed to nonfarm income growth among higher land-owning groups.

While there are a variety of contributions analyzing specific consequences of providing microcredit to women, like for example, the impact of women’s participation in microfinance on intimate partner violence in Bangladesh, Lipi (2016) and Porter (2016) examine the broader impact of microcredit on women’s empowerment. Based on in-depth interviews, Lipi (2016) found that women’s participation in microcredit programs provided by Grameen Bank increased the women’s feelings of dignity as they had defined it, while women participating in non-Grameen Bank microcredit experienced feelings of risk, stress, shame, marginalization, vulnerability, and other challenges.

Porter (2016) reviews the effectiveness of microcredit in empowering women borrowers in rural Bangladesh by examining how gender-specific borrowing activities influence household expenditures and by examining the effects of all loans rather than only those provided by microcredit organizations. She uses a quasi-experimental design to identify the effects of borrowing by men and women by using an original combination of panel data and instrumental variables on subsamples of the surveyed population and finds that the borrower’s gender affects how households allocate their resources to different expenditure items and assets that are valued differently by men and women. Overall, her findings suggest that providing greater credit access to women may improve their household bargaining positions.

II.2. Main Contributions to Haiti’s Microcredit Literature

One of the earliest major contributions to the microcredit literature in Haiti is Huda and Simanowitz (2009). They examine the lessons learnt from an innovative project undertaken by Fonkoze that combines the strength of cash and asset transfer-based social protection with the livelihood support and empowerment of microfinance. The project provided extremely poor households with a series of protective and promotional inputs for 18 months to help them build sustainable livelihoods strong enough to allow them to participate in a tiny microcredit program. The tiny microcredit program then seeks to further develop their assets and savings, which with significant hand-holding, ultimately allows them to graduate into mainstream microfinance. Huda and Simanowitz (2009) also explore the effectiveness of the intervention and its implications for the lives of Haiti’s poorest, as well as reflect upon our understanding of the pathways out of extreme poverty.

Castillo (2010) is a news article of the New York Times, written about eleven months after Haiti’s devastating earthquake of January 2010, which killed as many as 316,000 people. Castillo examines the questions if microcredit is able to save Haiti. He acknowledges that Haitian microcredit banks provide a crucial lifeline to the poor, but he also points out that their financial situations are sometimes nearly as precarious as those of their clients, and that actually was the situation before the earthquake. Castillo reports that Finca Haiti, which is one Haiti’s largest microcredit groups had to write off almost a third of its portfolio after many clients died in the earthquake or lost their homes and businesses. A staggering 53 percent of its borrowers were late

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2 For example, see Murshid (2016) and Karim and Law (2016).
on their payments. Yet, despite all that, several Haitian MFIs are expanding, saying their loans are one of the only paths to self-sufficiency for the growing number of poor people in Haiti.

Rosenberg et al. (2011) examine the HIV risk behavior among 192 female clients of the Haitian microfinance organization Fonkoze. They find that clients with longer microfinance experience have typically lower indicators of HIV risk behavior and higher indicators of power within a relationship compared to those with shorter experience. In particular, those with longer memberships were 72 percent less likely to report partner infidelity, were nearly four times more likely to use condoms with an unfaithful partner, and had higher average general power index scores compared to those with shorter experience. Though Rosenberg et al. (2011) provide evidence that long-term exposure to microfinance is associated with reduced HIV risk behavior in Haitian women, they also suggest that further research is needed to explore the use of microfinance as a tool to prevent the spread of HIV.

Barth, Birkenmaier and Berg-Weger (2014) examine factors that affect repayment of loans to one microfinance institution in rural Haiti. Using an inductive method to develop themes, they found that borrowers understand the repayment policy and are motivated to repay their loans because of their interest in having good credit. They recommend that the loan program structure could be further developed and provide further program recommendations.

Hossein (2014) documents how poor Haitians have created their own informal groups, cooperatives and credit unions, sometimes with the support of foreign non-governmental organizations. These microcredit organizations have reached hundreds of thousands of people in Haiti, based on having a socially conscious philosophy of using microfinance as a vehicle to ensure economic democracy for the masses. They understand how to make microfinance assist the marginalized poor in a society segregated by class and race.

Building partly on Hossain (2014), Hossein (2016) explores the politics, histories and social prejudices that have shaped the legacy of microcredit in Grenada, Guyana, Haiti, Jamaica and Trinidad. Examining original qualitative data and using a feminist perspective, she offers multiple solutions that prioritize the needs of marginalized and historically oppressed people of African descent. Overall, Hossein (2016) concludes that microfinance has been politicized to the degree that it has lost much of its potential in Haiti and other Caribbean countries.

Last but not least, Werlin with Farmer (2016) have provided a detailed insight into the effectiveness of Haiti’s largest microfinance institution by documenting the successes and failures of several women who tried to change their families’ lives by using Fonkoze’s signature program. While the experiences documented by Werlin shows that program participants have benefited in many ways from this remarkable program, they also make clear that there is no single pathway to overcome extreme poverty in rural Haiti.

### III. Empirical Background

The left-hand panel of Figure 1 shows the evolution of GDP per capita in purchasing power parity (PPP)-adjusted constant 2011 dollars from 1996 to 2015. It shows that until year 2000, an average person in Bangladesh was poorer than an average person in Haiti. However, as Bangladesh has

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3 Fonkoze’s signature program, which is designed to uplift Haiti’s rural ultra-poor, is called Chemen Lavi Miyò (CLM), which translates to the pathway to a better life.

4 The chart begins with 1996 as that is the first year such data is available for Haiti.
made continuous progress in increasing its GDP per capita while that of Haiti has stagnated, Bangladesh overtook Haiti in 2001. Bangladesh’s PPP-adjusted GDP per capita has more than doubled from international $1,474 in 1996 to $3,137 in 2015, while that of Haiti has remained almost constant at around international $1,600 during 1996-2015. Haiti’s GDP per capita (in constant 2011 international $) is actually slightly lower in 2015 than it has been in 1996.

The right-hand panel of Figure 1 shows the growth rate of real GDP per capita from 1997 to 2015, which largely mirrors the left hand panel. It shows Bangladesh’s relative steady GDP per capita growth, while Haiti’s GDP per capita growth fluctuates tremendously. Due to Haiti’s devastating earthquake in 2010, Haiti’s GDP per capita growth plummeted to minus 6.9 percent in that year. It then increased in the following year, partly as over US$10 billion was donated in international aid. However, Haiti’s GDP per capita growth rate shows a declining trend since 2011.

**Figure 1: GDP per capita and Real GDP per capita Growth in Bangladesh and Haiti**

![Chart showing GDP per capita and growth rates in Bangladesh and Haiti from 1996 to 2015.](chart)

Source: Created by author based on World Bank (2017).

Anyway, Bangladesh is one of the fastest growing economies, while Haiti is one of the least growing economies. After Bangladesh gained its independence in 1971, it introduced many economic reforms, especially in the early 1980s. “In the industrial sector, important policy changes have been introduced with a view to developing a broader and more diversified industrial base led by the private sector. These included measures: (i) to encourage private sector investment by liberalising sanctions and controls of investment, improving the import regime, and introducing investment and export incentives, and (ii) to improve the efficiency of public sector industrial enterprises through denationalisation, financial restructuring and improvements in pricing policies.”

On the other hand, Haiti has been negatively impacted by political instability and various natural disasters, including a 7.0 strong earthquake in 2010. The decline in Haiti’s GDP per capita during the early 2000s can be attributed to the U.S. trade embargo enacted because of political

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dissatisfaction. When the embargo was lifted in 2003, Haiti’s GDP sharply increased, with most of the increase in GDP due to foreign aid assistance, which also dramatically increased after the 2010 earthquake. However, due to its high vulnerability and political instability, Haiti’s future prospects do not look well.

Looking at Figure 2, which shows the evolution of life expectancy from 1970-2015, both Bangladesh and Haiti have overall made nearly continuous progress, though Bangladesh has made far more progress than Haiti. Both countries started out with a life expectancy of about 47 years in 1970. Bangladesh’s life expectancy reached 72 years in 2015, while that of Haiti reached 63 years in 2015. Given that the catastrophic impact of Haiti’s earthquake of 2010 is not reflected in the data, there is some doubt about the accuracy of the Haitian data.⁶

![Figure 2: Life Expectancy of Bangladesh and Haiti, 1970-2015](image)

Source: Created by author based on World Bank (2016).

Poverty and life expectancy are strongly correlated with each other as those with lower income levels suffer from higher rates of mortality and disease. Furthermore, “impaired health exacerbates poverty and undermines development, whether directly or indirectly via lowering growth.”⁷ Microcredit is important in lifting people out of poverty for a healthier, sustainable way of life.

Bangladesh’s health care system continues to improve, with healthcare provided in both the public and private sectors in collaboration with various international organizations. This approach is called the sector wide approach, in which the government and developmental agencies collaborate with each other on the formation of health policy. Grameen Healthcare, a sister organization of

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⁶ Though not shown here, we also examined the data for Haiti’s population growth, which shows zero impact of the devastating earthquake of 2010, which cannot be correct as about two percent of Haiti’s population died due to the earthquake.

Grameen Bank, created clinics in both the rural and urban areas of Bangladesh, a micro-health insurance scheme for the poor, Grameen Eye Hospitals, and Grameen Caledonian College of Nursing. These contributions by Grameen Foundation, add to people’s life expectancy in Bangladesh.

In Haiti, while community clinics are being built in rural areas and the government provides free healthcare to its citizens, many of the established hospitals are inaccessible or lack resources. Many hospitals are located in the capital, Port-au-Prince and the rural areas are being neglected. Fortunately, Haiti’s healthcare continues to improve due to support by Partners in Health, Doctors without Borders, and other developmental agencies providing resources and services to many Haitian citizens.

The left and right panels of Figure 3 show, respectively, the adult and youth literacy rates for the two countries. Although there is a considerable lack of data for both countries, the available data seems to indicate that—similar to the evolution of the previous indicators—Bangladesh has made continuous progress in increasing adult and youth literacy rates, while Haiti shows a significant deterioration in adult and youth literacy rates from 2003 to 2006, which unfortunately is the last year such data is available for Haiti. Assuming that Haiti has made some progress since 2006, both countries can be assumed to have similar levels of adult and youth literacy rates.

Figure 3: Adult and Youth Literacy Rates in Bangladesh and Haiti, all available data

However, the education systems and complications are very different across the two countries. Bangladesh provides free primary school education, while most of Haiti’s schools are private, managed by communities, religious organizations, and non-governmental organizations (NGOs). Though there are some dialects, nearly everybody in Bangladesh speaks Bengali, which is also Bangladesh’s national language. Haiti’s official national language is French, but only about ten percent of Haiti’s population speak the national language, the rest speak Creole.
IV. Key Characteristics of Microcredit in Bangladesh and Haiti

Table 1 provides some key characteristics of the microfinance industries in Bangladesh and Haiti. It shows that the number of active borrowers is with nearly 24 million people in Bangladesh more than 110 times the number of active borrowers (207,000) in Haiti. Taking the differences in population size into account, about 14.7 percent of the Bangladeshi population were active borrowers, while about 1.9 percent of Haiti’s population were active borrowers. Hence, as a percent of population, Bangladesh has about seven times the number of active borrowers than Haiti.

Table 1: Key Characteristics of Microfinance Industries in Bangladesh and Haiti

<table>
<thead>
<tr>
<th>Country</th>
<th>Active Borrowers</th>
<th>Gross Loan Portfolio</th>
<th>Average Loan Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(Number)</td>
<td>(Percent of Population)</td>
<td>(USD, millions)</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>23,707,000</td>
<td>14.7</td>
<td>5,564</td>
</tr>
<tr>
<td>Grameen Bank (2014)</td>
<td>7,030,000</td>
<td>4.4</td>
<td>1,176</td>
</tr>
<tr>
<td>ASA (2015)</td>
<td>6,207,690</td>
<td>3.9</td>
<td>1,534</td>
</tr>
<tr>
<td>BRAC (2015)</td>
<td>4,923,940</td>
<td>3.1</td>
<td>1,437</td>
</tr>
<tr>
<td>Haiti</td>
<td>207,000</td>
<td>1.9</td>
<td>87</td>
</tr>
<tr>
<td>Fonkoze Financial Services, S.A. (SFF) (2015)</td>
<td>61,400</td>
<td>0.6</td>
<td>12.2</td>
</tr>
<tr>
<td>FINCA Haiti (2016)</td>
<td>39,259</td>
<td>0.4</td>
<td>8.3</td>
</tr>
<tr>
<td>SogeSol (2015)</td>
<td>34,240</td>
<td>0.3</td>
<td>19.0</td>
</tr>
</tbody>
</table>

Source: Created by author based on World Bank (2016) and data available at: https://www.themix.org/ and http://www.finca.org/where-we-work/latin-america/haiti/.

Table 1 also shows that the gross loan portfolio of the Bangladeshi microcredit institutions is currently about US$5.6 billion, while it is about US$87 million in Haiti. Expressed in percent of GDP, Bangladesh’s gross loan portfolio is about 3.2 percent, while it is about 1.0 percent in Haiti. The only indicator where Haiti beats Bangladesh is the average loan amount, which was about US$235 in Bangladesh and about US$420 in Haiti. This is a significant difference, especially if taking into account that GDP per capita is now considerably higher in Bangladesh (see Figure 1).

Excluding Haiti’s higher average loan amount, most of these differences between Bangladesh and Haiti can be explained by the fact that Bangladesh is the country where microcredit has been established first, with the creation of Grameen Bank in 1976 (legally established in 1983) by Dr. Muhammad Yunus. The first microcredit organization of Haiti (Fonkoze) was legally established...
in 1995, by a group of grassroots leaders under the leadership of Father Joseph Philippe. In terms of the number of active borrowers, Grameen Bank and Fonkoze remain the largest microcredit institution, respectively in Bangladesh and Haiti; though other microcredit institutions have overtaken rank 1 in each country if looking for example at the gross loan portfolio.

Both countries have many institutions providing some kind of microcredit, though the microfinance industry remains relatively concentrated. In terms of active borrowers, the share of Bangladesh’s three largest microcredit institutions (Grameen Bank, ASA, and BRAC) amounts to 76.6 percent of all Bangladeshi microcredit institutions, while Haiti’s three largest microcredit institutions (Fonkoze Financial Services, S.A. (SFF), FINCA Haiti, and SogeSol) account for 65.2 percent of all borrowers in Haiti. Based on an analysis by Whiteside and Wardle (2009), there were 21 microfinance institutions operating in Haiti, of which only 10 had five or more branches. Of all branches, about one third were located in metropolitan Port-au-Prince, another third were located in other urban areas, and another third were located in rural areas. This actually is another difference to Bangladesh, as both Grameen Bank and BRAC focus mostly on rural poverty and have thousands of branches all over the country.

The average loan amounts vary widely across different microcredit institutions as well as within one microcredit institution. Though the large majority of Grameen Bank’s loans are relatively small loans to women for income generating purposes, Grameen Bank also provides some housing loans, student loans, and microloans for struggling members (beggars). According to Whiteside and Wardle (2009), Fonkoze provides three different microcredit loans: a) Business Development Loans (with loan amounts between $1,300 and $25,000), Solidarity Loans (with loan amounts between $75 and $1,300), and Ti Kredi Loans (with loan amounts between $25 and $75). Table 2 illustrates the different methods and loan amounts of World Concern, which is a relatively small the Haitian microcredit institution.

Table 2: Three Microcredit Methods Used by World Concern in Haiti

<table>
<thead>
<tr>
<th>Method</th>
<th>Village Bank</th>
<th>Solidarity Group</th>
<th>Individual</th>
</tr>
</thead>
<tbody>
<tr>
<td>People per Group</td>
<td>1,000-11,600</td>
<td>1,150-7,000 USD</td>
<td>175-11,600 USD</td>
</tr>
<tr>
<td>Min - Max Loan Size</td>
<td>1,000-11,600</td>
<td>1,150-7,000 USD</td>
<td>175-11,600 USD</td>
</tr>
<tr>
<td>Interest Rate</td>
<td>2%</td>
<td>3%</td>
<td>3%</td>
</tr>
<tr>
<td>Repayment Period</td>
<td>6 months</td>
<td>8-12 months</td>
<td>8-12 months</td>
</tr>
</tbody>
</table>

Source: Snowbarger (2013), Infographic No. 2.

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Figure 4 shows the lending interest rates in Bangladesh and Haiti of the formal banking sector. Lending interest rates are defined by the World Bank (2017) as “the bank rate that meets the short and medium-term financing needs of the private sector.” Lower lending interest rates encourage aggregate demand and make it easier for consumers and firms to borrow money. The graph shows that Bangladesh’s average lending interest rate fluctuated moderately between 10-14 percent, while that of Haiti fluctuated from as high as 48 percent and as low as 8.7 percent. Haiti’s high fluctuations in interest rates makes it difficult for individuals and businesses to use credit.

![Figure 4: Average Lending Interest Rates (percent), 1995-2016](image)

Source: Created by author based on World Bank (2017).

A key difference between Grameen Bank and Fonkoze is that Grameen Bank is self-sufficient, while Fonkoze remains dependent on donor support, especially as the 2010 earthquake damaged Fonkoze’s headquarters in Port-Au-Prince and killed or financially ruined many of its members. However, according to the Fonkoze website, 96 percent of the members of Fonkoze’s Chemen Lavi Miyò (CLM) program successfully complete the program and transform their lives. The Fonkoze website attributes this high success rate to using specially trained case managers to work with CLM members throughout an intensive 18-month process to help them build the confidence and skills necessary to create a better life for themselves and their families. While Fonkoze has gained international recognition for its work on poverty reduction in Haiti, it was Dr. Yunus, who (jointly with Grameen Bank) won the Noble Peace Prize for “their efforts to create economic and social development from below.”

Grameen Bank and Fonkoze have similar approaches in the sense of their holistic process in lending money to mostly poor women. Both target credit to women and have similar processes in solidarity lending. In the case of Grameen Bank, each borrower has to be part of a group of five

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10 See [https://www.nobelprize.org/nobel_prizes/peace/laureates/2006/].
women and the other four women have to approve the borrower’s business plan. In the case of Fonkoze, before these women are given loans they have to complete a six-month-training period in which they learn business management skills, life skills training, and empower these women with self-confidence. Once they complete this training, they are given a certificate of achievement and join a group of five other women, who also are part of the loan program. It is stated that when one person in the group drops out of their repayment in loans, the entire group is unable to receive any more loans; but Fonkoze is lax in terms of group responsibility because of their relatively high retention rate in repayments.

Grameen Bank has also adopted, what they call, Sixteen Decisions, which are a kind of broad guidelines to achieve a higher standard of living for the lenders and their families. Figure 5 is a nice illustration of the various services, uses and effects of microcredit, as they are typically the case for most microcredit institutions, in both, Bangladesh and Haiti.

**Figure 5: Services, Uses and Effects of Microcredit**

![Microfinance for women](http://brac.net/microfinance-programme/item/856-microfinance-for-women).

While there is no detailed economic analysis of the country-wide impact of microcredit in Haiti, a recent book by Shahidur Khandker, Baqui Khalily and Hussain Samad (2016) finds that Bangladesh’s microfinance institutions have had a sustained benefit over the last 20 years in reducing poverty and increasing incomes. According to Khandker et al. (2016), microcredit accounted for a 10 percent reduction in rural poverty in Bangladesh, meaning that MFIs lifted some 2.5 million Bangladeshis from the ranks of the poor. Microcredit has also helped to diversify borrowers’ economic activities. Despite their traditional focus on non-farm activities, Khandker et al. (2016) also come to the conclusion that microcredit institutions have raised farm income and reduced reliance on wage income, producing significant positive effects for women and marginal farmers. A 10 percent increase in women’s credit use was found to increase crop income by 3.5 percent, non-crop income by 2.8 percent, and total farm income by 0.7 percent. Khandker et al. (2016) also compared the operational efficiency of Bangladesh’s leading microcredit institutions with those of India, Indonesia, Mexico, Thailand, and Vietnam, and come to the conclusion that Grameen Bank and BRAC are among the world’s most efficient microfinance institutions.

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V. Disasters, Regulations, and Corruption

V.1. Microcredit and Disasters

Bangladesh is a developing country that is highly vulnerable to natural disasters of floods, droughts, tornados, etc. In 1974, a famine spread throughout the country and was estimated to have starved around 27,000 people. As documented by Loro (2013), it was the great famine of 1974, which inspired Dr. Yunus to start lending money to poor people.

Given that Bangladesh has dealt with many natural disasters, the natural disaster response has been improving. For example, after the 1991 cyclone, the Bangladeshi government created a warning and evacuation system, notifying citizens of impending disasters. Also in response to the cyclone, more shelters were built, totaling to about 4,000 shelters. These shelters provide latrines, storage, and can hold thousands of people. Though negatively affected by such natural disasters, many microcredit institutions provided a kind of emergency loans to poor people to get their life back on track. As summarized in Vatsa (2005, p. 1), “while the jury is still divided on the impact of microfinance on poverty alleviation, its role in risk management and vulnerability reduction has been acknowledged more conclusively.”

Though Haiti is less prone to natural disasters than Bangladesh, it had to deal with various natural disasters, including a 7.0 magnitude earthquake in 2010, which had a disastrous effect on Haiti, striking in the center and capital of the country, Port-au-Prince. It affected over 3.5 million people, and caused the death of as many as 316,000 people.12 The Haitian government did not have any immediate response to this disaster and mainly relied on foreign aid. However, this international aid was mostly uncoordinated and not supporting Haiti’s long-term growth.

In addition, many organizations were doing similar projects for Haiti in providing food for the country, while few organizations were working on modes of transportation, clean and accessible water, or long-term placements outside of refugee camps. These organizations did not have long-term sustainable projects in helping Haiti grow and recover from the earthquake. Providing aid via microcredit loans would have been more efficient and sustainable, but given the negative impact the earthquake had on Haiti’s microcredit institutions, most of them were unable to help.13

V.2. Microcredit and Government Regulations

Micro finance institutions have been in Bangladesh over thirty years and overtime government interventions and regulations have been put into effect. In 2006, the Bangladeshi government created an oversight branch called Microcredit Regulatory Authority (MRA). The MRA monitors and supervises the financial services of microfinance institutions in Bangladesh. It also licenses microfinance institutions and requires microfinance institutions to operate as a non-governmental organization. These regulations are important to reduce detrimental effects resulting from profit-minded institutions, which may offer risky loans, absurdly high interest rates, or threaten borrowers who cannot repay loans. With the help of government interventions, more funding and tax cuts can be offered for micro-finance institutions. On the other hand, government regulations should not be overbearing and hinder microfinance institutions, rather regulate and monitor these institutions towards the right direction.

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12 See Castillo (2010).
13 See Furtick (2010).
Unfortunately, there are some cases where government overstepped its regulatory role, like when the Bangladeshi government forced Dr. Yunus to resign from Grameen Bank, which was largely interpreted as a political move by the ruling party against Dr. Yunus. Similarly, though there are relatively few government regulations for microfinance institutions in Haiti, even the few existing regulations have hampered some microcredit institutions. As documented by Tucker and Tellis (2005), though many microfinance institutions collect savings deposits, they are often barred from using them for loans by their countries’ laws. In Haiti, Fonkoze has sought regulated status, which would allow them to access their deposits. It would also enable Fonkoze to better compete with other MFIs, some of which are regulated subsidiaries of commercial banks. However, in the midst of political and economic turmoil, Haiti’s Central Bank had delayed Fonkoze’s transformation.

V.3. Microcredit and Political Corruption

“Microfinance institutions’ ability to attract capital is in part dependent on the stability of the country’s political climate.”14 This applies to MFIs in Bangladesh and Haiti as Bangladesh and Haiti are both countries that face high levels of political corruption and low economic freedom.

In 2014, Bangladesh suffered from political instability due to political and religious discontentment with the current political party. While some citizens want an Islamist state, others want a secular state. This discontentment turned into violent protests on the streets. According to Gowen (2014), the problem is that the instability continues as the two principal parties cannot get their acts together. This could open the door for Islamic fundamentalism and radicalism to get a foothold and have more influence and more power in the future.15 With continuous political unrest, economic growth is expected to moderately decline, due to a decrease in foreign investment and productivity. As stressed by Khatun (2014), all the effects of political unrest on the economy are in fact intertwined as they all lead to lower economic growth that leads to high unemployment, high income erosion and high poverty.

Haiti also went through periods of unstable political governance via a series of ineffective, short-term, and corrupt leaders. From 2000-2008, three Presidents were dismissed or jailed; at one point in 2008, Haiti had no government. The main concerns in Haiti are non-transparent elections, ineffective leaders, and bribery. The concern with elections is that the political party with the most money and resources usually wins an election through monetary bribes. This creates not only distrust between the Haitian citizens and the Haitian government, it also dissuades foreign investment. Bribery is rampant in Haiti, especially within the economic sector, as local officials have to be bribed in order to create business entities within the country.

Although, microcredit is one step towards empowering the economic and social development of citizens, it is on a much smaller scale than could be achieved via an efficient and effective government. In order to encourage more foreign investment into Bangladesh and Haiti, there needs to be a supporting infrastructure and effective government regulations. Industrialization can spur employment rates, GDP per capita, and overall economic growth in Bangladesh and Haiti beyond of what microcredit can achieve.

15 Gowen (2014).
VI. Conclusion

Bangladesh’s Grameen Bank continues to be an efficient model of microfinance. Furthermore, branching out into other sectors and organizations (such as Grameen Communications, Grameenphone, Grameen Fisheries and Livestock Foundation, etc.), Grameen has helped its borrowers to become more efficient and hence, make microcredit more sustainable. Although there are inhibiting government regulations and political corruption, Grameen Bank continues to thrive.

The next step for Haiti is to create a stronger infrastructure. Government has a huge role in not only economic factors but also in social areas, like the education and health sectors. The quality of life depends on government policy implementations and different agencies under the government. As it is only a matter of time when Haiti will face the next natural disaster, Haiti’s government also needs to set up disaster response agencies and strategies. The Haitian government also needs to collaborate better with international development agencies. Finally, the government needs to have regulatory guidelines and oversee the services of the MFIs in Haiti without unnecessarily burdening them. Through efficient microcredit loans, the poor will have an all-around higher standard of living, changing individual lives at a time.

References


Contraception Availability and Population Growth in Cameroon and Zimbabwe

Ivy Kaplan

Abstract
This article examines the relationship between access to contraceptives and population growth rates in Cameroon and Zimbabwe. Although these two countries share the same continent, their individual progress on offering contraceptives to their citizens varies greatly. In Cameroon, the national health care system is largely ineffective and less enthusiastic regarding the use of Western Medicine, failing to offer sexually active women the resources they need to control both rampant rates of sexually transmitted diseases and overwhelming birth rates. In Zimbabwe, the situation is very different as there are (a) much easier access to contraceptives, (b) well-defined birth control policies and (c) a government emphasizing the benefits of contraception use to improve the lives of its citizens. This article aims to highlight the ongoing relationship between contraceptive availability and birth rates.

I. Introduction
Cameroon and Zimbabwe are both developing countries in Sub-Saharan Africa. Cameroon is a lower-middle income country in West Africa, while Zimbabwe is a low-income country in Southern Africa. However, their stances and actions related to contraceptive use are very different. Furthermore, given that contraceptive use, when effectively promoted, can have significant effects on lowering population growth, these countries’ attitudes related to contraceptive use have powerful implications. Today, Cameroon tends to adhere to long-standing pro-natalist population policies, while simultaneously providing few family planning and contraceptive services to its citizens, ultimately creating the perfect environment for large population growth to occur. Zimbabwe, on the other hand, has demonstrated almost the opposite, making family planning a large priority and adopting a community-based contraceptive distribution program.

Following this introduction, this article will provide a brief literature review, followed by some empirical background information on both countries. The subsequent discussion section will focus on four different aspects, drawing a link between contraceptive availability and population growth. The first sub-section of the discussion section looks into the historical context of contraceptive availability and population policies, and how those continue to influence policies and practices today. The second sub-section discusses education, and how education levels correlate to
contraceptive use. The third sub section looks at contraceptive availability in both countries; in addition to how often citizens take advantage of these contraceptive methods. The fourth sub-section discusses conventional family structures in sub-Saharan Africa, and how these tend to promote high birth rates. Finally, the last section of the article will provide some conclusions and suggestions for future measures that both countries can take.

II. Brief Literature Review

When looking at contraceptive use in correlation to population growth rates, a variety of factors must be considered to develop a thorough understanding of the relationship between the two. This brief literature review focuses on societal differences between Cameroon and Zimbabwe that influence contraceptive patterns, in addition to providing relevant historical context for related policies that are in place today.

- Akim Mturi and Kembo Joshua (2011) give a brief history of family planning efforts in Zimbabwe and how they have impacted fertility rates today. They discuss how shortly after gaining independence, in 1981, the new government took over the prior Family Planning Association of Rhodesia (FPAR) and changed it to become the Zimbabwe National Family Planning Council (ZNFPC) in 1984. The authors credit the success of ZNFPC to high governmental commitment, in addition to instituting different laws and policies to encourage the use of family planning, indiscriminate of economic status.

- A 1999 report by the Center for Reproductive Law and Policy (CRLP) and the Association of Women Jurists of Cameroon (ACAFEJ) provides information on Cameroon’s past population policies that may have affected current fertility and contraceptive use rates. According to the report, Cameroon’s population policies were pro-natalist at least until the 1980s. However, due to high, unwanted birth rates under this pro-natalist policy, Cameroonian government switched its position in 1998 to lower the the unwanted birth rates. To accomplish this the government stressed a limitation on resources to support large families, in addition to supporting educative measures surrounding family life, sexual education and educating citizens about birth control. However, as the report shows, there is a wide gap between the laws and policies affecting women’s reproductive lives and the reality of women’s reproductive lives in Cameroon.

- In looking at fertility rates and contraception usage between both countries, family planning measures must be taken into consideration as well. Ajong, et al (2016) discusses the current determinants of unmet need for family planning. On a more global level, these commonly include factors including age, marital status, religious statutes, education level, occupation and income. However, Ajong, et al found that the determinants most important when considering Cameroon include total number of pregnancies, number of children alive, approval of contraceptive use by the sexual partner, and discussing family planning within the couple.

- The study by Magure, Manene, Munjanja, Bradley and Mishra (2010) reviewed the trends in unmet need for family planning in Zimbabwe. Based on the further analysis of three consecutive Zimbabwe Demographic and Health Surveys (ZDHS) conducted in 1994, 1999, and 2005-06, they found that the groups within Zimbabwe that experience the highest unmet need include sexually-active women who have never been married, adolescents, uneducated women, poor women, nulliparous women, and women in two Matebeleland
regions. They came to the conclusion that “despite high contraceptive prevalence in Zimbabwe, subgroups of women with unmet need remain, particularly among marginalized women who may face barriers to family planning information and services.”

- A National Research Council (1993) Working Group on Factors Affecting Contraceptive Use examined the literature on the socioeconomic, social organizational, and family planning program factors that are related to contraceptive use in Sub-Saharan Africa. The report used a multivariate analysis to assess the relative importance of those factors that could be measured and for which data were available from surveys. Chapter 7 of the report assesses the relative importance of contraceptive use versus postpartum practices in inhibiting fertility in Africa. The report also explains that the HIV/AIDS epidemic can affect contraceptive use in two ways: In areas with high HIV/AIDS prevalence, families may reduce the contraceptive use in order to have more children to increase the chances of having some surviving. On the other hand, efforts to slow the spread of HIV/AIDS may encourage increased contraceptive use.

### III. Empirical Background

Prior to specifically focusing on contraception usage and its relationship to fertility and population growth in Cameroon and Zimbabwe, it is helpful to look first at the evolution of three basic socio-economic indicators: purchasing power parity (PPP) adjusted gross domestic product (GDP) per capita, life expectancy, and poverty.

**Figure 1: GDP per capita, PPP (constant 2011 international dollar), 1990-2014**

![Graph showing GDP per capita for Cameroon and Zimbabwe from 1990 to 2014](image)

Source: Created by author based on World Bank (2016).

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Figure 1 shows the disparities between Cameroon and Zimbabwe in terms of PPP-adjusted GDP per capita from 1990 to 2014. Cameroon started at a GDP per capita of $2,768 in 1990, experiencing a decline in growth until 1994 when it reached a low of $2,160. However, since then it has progressively grown, recently reaching $2,835 in 2014. Zimbabwe started at a GDP per capita of $2,526 in 1990, witnessing a significant decline until 2008 when it was $1,218. Although it has begun to rise again, reaching $1,709 in 2014, we can see that Cameroon is outperforming Zimbabwe by slightly over $1,000 when looking at the most recent data available.

Figure 2 shows the life expectancy at birth for both Cameroon and Zimbabwe from 1970 to 2015. Cameroon’s average life expectancy started off at 46 years in 1970, and has since witnessed a long-term period of slow growth, reaching 55 years in 2015. Zimbabwe, however, exhibits a much different pattern. They started off at 54 years in 1970, peaking at 61 in 1986 and then experiencing a period of decline until 2002 when it bottomed out at 40 years. While there are a variety of factors that have contributed to Zimbabwe’s decline in life expectancy during the 1990s, the HIV/AIDS epidemic has been a major factor. In the 2000s, Zimbabwe’s average life expectancy has grown significantly, surpassing Cameroon in 2015 with an average of 59 years.

![Figure 2: Life Expectancy at Birth, Total (years)](image)

Source: Created by author based on World Bank (2016).

Finally, Figure 3 shows all available data on the percentage on people living in poverty in Cameroon and Zimbabwe. Using the international poverty line of $1.90-a-day, it shows that nearly half of Cameroon’s population lived in poverty in 1996. The poverty headcount ratio then declined to 23.1 percent in 2001, but increased to 29.3 percent in 2007, which is the last year such data is available. In the case of Zimbabwe, the only available data on poverty is for 2011, when 72.3 percent of the population lived below the national poverty line.
IV. Discussion

Although many different factors contribute to contraception availability, which then influences fertility rates and population growth rates in Cameroon and Zimbabwe, this discussion session will focus on four issues: first, the historical context and influences on contraceptive availability; second, the role of education; third, the current contraceptive access and use; and fourth, the traditional family structure within these two sub-Saharan African countries.

IV.1. Historical Context and Influences on Contraceptive Availability

Looking into the history of contraceptive usage on a worldwide scale, a revolution took place from the 1960s onwards, with contraceptive prevalence rising from less than 10 percent in the early 1960s to approximately 55 percent in the late 1980s. However, the situation was much different in Sub-Saharan Africa, a region that has typically been characterized by high birth rates and limited access to modern contraception, in addition to large rural populations, low socioeconomic development levels, high infant mortality rates, and deeply ingrained cultural values that encourage large family sizes. Therefore, as this contraceptive revolution took place, many African governments questioned the concept of limiting population growth and were skeptical of funding these programs given other problem areas throughout their countries that needed funding. Furthermore, in order to gain a better understanding of contraceptive availability and population growth in Cameroon and Zimbabwe today, it is crucial to look into their historical stance on these topics.

Looking at Zimbabwe, it is one of the few sub-Saharan countries that have demonstrated a long-term commitment to family planning and population control. Before gaining its independence from the British in 1980, the government did not have any formal population policies; instead

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3 National Research Council (1993).
encouraging the creation of family planning services. Beginning in the 1970s, mostly private and mission health facilities dispensed family planning information, while the government subsidized the private family planning association. However, after gaining its independence, actions taken by the country significantly shifted. In 1981, the Ministry of Health took on family planning activities as part of its child spacing program, and the Zimbabwe National Family Planning Council was formed, both making contraceptives more readily available and at fairly low prices. This early prioritization of making contraception available to citizens is expected to continue over the next years, making Zimbabwe a leader within the continent in this realm.\footnote{This paragraph is based on National Research Council (1993).}

According to the Report by the Center for Reproductive Law and Policy (CRLP) and the Association of Women Jurists of Cameroon (ACAFEJ) (1999), Cameroon’s history has adhered more to upholding the tradition of encouraging population growth and large family size. As the report states, Cameroon adopted a pro-natalist policy until the 1980s. However, after extremely high birth rates and large numbers of unwanted children, the government switched its position in 1998, attempting to decrease birth rates within the country. To succeed in this goal, government officials began emphasizing family life education, sex education and contraceptive education for community members. Additionally, in 1992 Cameroon instituted a National Population policy to improve the lives of its citizens, incorporating a specific measure to increase access to family planning services in rural and suburban areas. Overall, while Cameroon did eventually begin to focus on population control and contraceptive education, their efforts began much later than Zimbabwe’s, one of the potential reasons why contraceptive availability in the country, which will be discussed more in depth later on, is still lacking.

\textbf{Figure 4: Total Fertility Rate (births per woman)}

![Figure 4: Total Fertility Rate (births per woman)](image)

Source: Created by author based on World Bank (2016).

The effects of these historical policies and practices are reflected in the evolution of total fertility rates per woman shown in Figure 4. In Cameroon, fertility rates have decreased very moderately...
from 6.2 births per woman in 1970 to 4.6 births per woman in 2015. In contrast, Zimbabwe’s total fertility rate has decreased much more drastically. As shown in Figure 4, starting at a very high rate of 7.2 births per woman in 1970, the country’s total fertility rate began to decline especially during the 1980s, which correlates to the country gaining independence in 1981 and the government taking over the Family Planning Association (as was already referred to in the literature review above). Though Zimbabwe’s fertility rates stabilized during most of the 2000s, they finally started to decrease once again in 2011, reaching 3.8 births per woman in 2015.

Another way to visualize the impact of family planning policies is by looking at population growth rates, though the HIV/AIDS epidemic is distorting the population growth rates especially in Zimbabwe. As shown in Figure 5, Cameroon’s population growth rates have been increasing from 2.55 percent in 1970 to 3.04 percent in 1986, after which they have been declining, reaching 2.50 percent in 2015. On the other hand, Zimbabwe’s population growth rates have been more volatile, and experiencing largely due to the HIV/AIDS epidemic a very drastic decline from 1983 until 2003. Due to the decline in HIV/AIDS prevalence rates, Zimbabwe’s population growth rates have started to increase since 2003, but remained with 2.3 percent in 2014 below those of Cameroon.

**Figure 5: Population Growth (Annual Percentage)**

Due to the decline in HIV/AIDS prevalence rates, Zimbabwe’s population growth rates have started to increase since 2003, but remained with 2.3 percent in 2014 below those of Cameroon.

**IV.2. Role of Education**

Education is critical in empowering women around the world, and consequently, leading to lower fertility rates and lower family sizes overall. Additionally, as the National Research Council

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5 Zimbabwe’s HIV prevalence rates increased from the emergence of HIV/AIDS to a maximum of 29.6 percent in 1998, after which they gradually declined to 16.7 percent in 2014. Hence, HIV/AIDS is still a very serious issue in Zimbabwe.

6 See Nierenberg (2002) for further details.
(1993) points out, the use of modern contraceptives increases with education, and the use of modern contraceptives becomes even more likely if women attend post-secondary educational institutions. Therefore, providing citizens and specifically females with even a baseline education can be highly influential in determining birth rates and contraceptive usage.

Figure 6 shows the overall adult literacy rates between both countries. While the data is somewhat restricted, given that actual literacy rates are only available for 3-4 years each within both countries, an overall trend can ultimately be deciphered. From 1976 to 2010, Cameroon’s adult literacy rate rose from 41 percent to 71 percent, a 30 percent increase overall. Zimbabwe’s adult literacy rate began at 77 percent in 1982, rising to 83 percent in 2011, approximately a 6 percent overall increase. Although Zimbabwe’s rate increase is much smaller, its starting point of 77 percent already tops Cameroon at its end point in 2011 at 71 percent. This exemplifies that from early on, Zimbabwe’s population has been much more educated overall than that of Cameroon.

Figure 6: Adult Literacy Rate (percentage of both sexes ages 15+), all available data

Source: Created by author based on World Bank (2016).

In addition to overall adult literacy rates, it is also important to understand how female literacy rates differ from those of males in both countries. Although education for both genders is important as they both factor into the family planning process, educating women is more crucial as they are the ones who will physically bear children if they choose to do so. Figure 7 highlights the disparities between male and female literacy rates in Cameroon. Although data is only available for four years, each one of these instances shows male literacy to be higher than female literacy. In 1976, the male literacy rate was 54 percent, while the female rate was only 29 percent. By 2010, these rates rose to 78 percent and 64 percent, respectively. Figure 8 shows the same data for Zimbabwe for all years available from 1970 to 2014. While the literacy rates are still higher for males at each of the three dates, the differences between the two genders are much smaller, ranging from 7 to 13 percent. Therefore, when comparing these two graphs, we can see that literacy rates and education are much more equal in Zimbabwe than Cameroon, likely contributing to lower population growth and fertility rates in Zimbabwe.
In addition to looking at literacy rates, it can also be revealing to examine the level of education that women in both Cameroon and Zimbabwe are obtaining. According to Demographic and Health Surveys and to the World Fertility Survey reports (two different methods of statistical analysis that have been carried out throughout different regions of sub-Saharan Africa), knowledge of modern contraceptive methods is strongly related to average female schooling levels. Therefore, even a slightly shorter duration in education could account for a much less comprehensive knowledge of possible and available contraceptive methods.

Figure 9 shows the percentage of students enrolled in secondary education institutions who are female between both countries. Beginning in 1971, Cameroon’s secondary education enrollment was 28 percent female. By 2012, this percentage had increased to 45, signifying a large-scale shift in educational gender representation throughout the country. Unfortunately, the data for Zimbabwe is slightly more limited. While they started off with a secondary education enrollment of 39 percent

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7 See National Research Council (1993).

in 1970, the most recent available data indicates that this number has increased to 49 percent in 2012 (not pictured on the line graph). Based on this data, overall, women in Zimbabwe make up a higher share of enrollment in secondary education institutions by approximately 4 percentage points, giving them a small upper-hand in having more educated females, who are more likely to learn about and use contraception throughout their lives.

![Figure 9: Percentage of Students in Secondary Education who are Female](image)

Source: Created by author based on World Bank (2016).

IV.3. Current Contraceptive Availability and Usage

In addition to historical context and education, contraceptive access is obviously a key factor to consider in regards to population. Obviously, citizens in Cameroon and Zimbabwe cannot be expected to use of modern contraceptive methods if they are not able to get their hands on them, and therefore would continue contributing to higher population sizes without access. To provide a better idea of what the term “contraceptive” means, we will first briefly explain what services and contraceptive methods are currently available in both countries.

Since 1981 when the Zimbabwe National Family Planning Council (ZNFPC) was established, they have provided a wide range of services throughout the country. As of 1993, there were 37 operating Family Planning Clinics, which distributed oral contraceptives, condoms, intrauterine devices (IUDs) and injectables. Additionally, the country had two institutions in Harare and Bulawayo where citizens could receive tubal ligations, vasectomies and infertility counseling resources. Zimbabwe has also adopted a community-based distribution system, appointing 700 trained distributors to travel around different regions of the country and educate, motivate and provide citizens with oral contraceptives to use. Today, these resources have likely only grown, now leading researchers among the country to look into ways to best target specific population groups and adapt their system to be even more efficient, given that overall contraceptive accessibility has been accomplished within the country.\(^8\)

\(^8\) This paragraph is mostly based on Manjanja (1993).
Unfortunately, specific information regarding which contraceptive methods are currently available in Cameroon is fairly scarce. In addition to weak political support for family planning programs, additional limitations including a lack of qualified personnel, limited information and publicity, poor management among existing family planning programs and low socioeconomic status provide some explanation and context for this lack of data. Therefore, while contraceptive prevalence and unmet needs will be discussed in the context of Cameroon shortly, specific methods remain vague.

Figure 10 contrasts contraceptive prevalence of any kind, as opposed to modern contraceptive methods (which will be further explained shortly) between the two countries. Looking at the earliest data available for Cameroon, we can see that in 1978 their contraceptive prevalence was only 2.4 percent. Growing to 34.4 percent in 2014, usage has skyrocketed over this 36-year period, signifying a small victory within the country itself. However, upon comparing Cameroon’s contraceptive prevalence to Zimbabwe’s, it becomes evident that Cameroon still has a long way to go in providing contraceptives for its female citizens. In Zimbabwe, the prevalence started at 38.4 percent in 1984, increasing to 66.9 percent in 2014. Therefore, Zimbabwe’s contraceptive prevalence is practically twice that of Cameroon, likely a large contributing factor to Zimbabwe’s slower population growth.

![Figure 10: Contraceptive Prevalence, Any Methods (Percentage of Women ages 15-49)](source)

While Figure 11 is fairly similar to Figure 10 in terms of content, it differs in terms of one key aspect. Instead of looking at any contraceptive method, it looks at modern contraceptive methods (defined by the World Bank as including female and male sterilization, oral hormonal pills, the intra-uterine device (IUD), the male condom, injectables, the implant, vaginal barrier methods, the female condom and emergency contraception). The contrast between the two countries is even more extreme in this sense. By 2014, modern contraceptive prevalence was 14.4 percent in

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9 Pillai and Teboh (2010).
Cameroon and 57.3 percent in Zimbabwe, again demonstrating that Zimbabwe surpasses Cameroon by almost four times its rate. Additionally, it should be taken into consideration that these more modern methods of birth control are more likely to be tested, and therefore more likely to be effective in terms of preventing pregnancy as opposed to older, more traditional forms.

**Figure 11: Contraceptive Prevalence, Modern Methods (Percentage of Women ages 15-49)**

Source: Created by author based on World Bank (2016).

**Figure 12: Unmet Need for Contraception (Percentage of Married Women ages 15-49)**

Source: Created by author based on World Bank (2016).
As shown in Figure 12 above, Zimbabwe also has a lower unmet need for contraception among married women than Cameroon does. In 1991, Cameroon’s unmet need for contraception was 22.3 percent. By 2011, it had increased to 23.5 percent, signifying a real problem within the country and providing an explanation for their ongoing population growth. Zimbabwe started with an unmet need for contraception of 19.1 percent in 1994, decreasing to 10.4 percent in 2014. Therefore, while Zimbabwe has shown consistent progress over time in providing contraceptive measures to its constituents, Cameroon has continued to struggle.

IV.4 Traditional Family Structures

Dating back hundreds of years, African countries have commonly exhibited pronatalist policies, relating to kinship and in favor of keeping lineages and systems of descent intact (National Research Council, 1993). It is also evident by looking at many of these countries today, that these policies and ideals remain valued among citizens, simultaneously supporting high fertility rates (National Research Council, 1993). Given that these values are still highly visible, we must consider their influence in Cameroon and Zimbabwe to see if they can explain both countries’ population growth.

Today, socio-cultural factors such as traditional beliefs, gender roles and religion greatly contribute to unmet contraceptive needs in Zimbabwe. Large families are seen as a source of strength and wealth, leading couples to have more children to raise their own social ranking within their respective communities. Additionally, there is great importance placed on giving birth to a male child, as they will eventually become the successors to any empires or lines of lineage that many elders in Zimbabwe value highly. Therefore, when considering these two factors, they clearly perpetuate and promote high fertility rates among women to secure a comfortable social status in comparison to others.10

In Cameroon, similar beliefs and traditions prevail throughout the country today. Except for one ethnic group in Cameroon who is matrilineal -- the Kom people -- Cameroonian society overall is mainly patriarchal. Because there is a strong preference to give birth to sons, many women continue getting pregnant until have a boy, creating bigger families and higher population rates in the process. Additionally, this desire to have a son often influences contraceptive use, making women more unlikely to take advantages of contraceptives available to them due to these cultural pressures of having male children.11

Figure 13 helps understand the desired family sizes that are common in Cameroon and Zimbabwe by looking at wanted fertility rates in each country. According to the World Bank (2016), wanted fertility rate “is an estimate of what the total fertility rate would be if all unwanted births were avoided.” In Cameroon, the wanted fertility rate was 5.2 percent in 1991, decreasing slightly to 4.5 percent in 2004 and leveling off from there. In Zimbabwe, the wanted fertility rate was 3.5 percent in 1994 and despite some slight wavering in 1999 and 2006; it remained at 3.5 percent in 2011. Therefore, we can see that Cameroon continues to demonstrate a higher preference to have more children in comparison to Zimbabwe by one percent overall.

10 This paragraph is based on Chitereka and Nduna (2010).
11 This paragraph is based on Pillai and Teboh (2010).
V. Conclusion

For many people and policymakers today, dramatic population growth is seen as a threat, contributing to environmental degradation worldwide and to unsustainable development patterns in developing countries. Given the still low-income per capita levels and missing social security systems, it is unrealistic to expect zero population growth for both Cameroon and Zimbabwe. However, by comparing the patterns and strategies used by both countries, it is possible to identify realistic ways to curb high population growth rates further and work towards a more sustainable global population size within the upcoming decades and centuries.

Based on the data presented in this article, we can assume that contraceptive availability and sufficient family planning procedures are correlated to lower population growth rates. Therefore, by providing political support and education regarding contraceptives, in addition to making sure that they are physically accessible, developing countries can reach their constituents and impact their contraceptive choices at a variety of different levels. Zimbabwe currently engages in all three of these previously mentioned practices, while Cameroon is essentially lacking in all of them. This explains why Zimbabwe’s fertility rates have been declining considerably more over the past few decades than in Cameroon.

In terms of further steps to be taken in the future, different strategies should be used in each country. Since Zimbabwe’s contraceptive presence and distribution system is fairly advanced today after decades of development, they can focus on reevaluating their system to see which members of their population, if any, are still being excluded or facing any remaining barriers that would deter them from taking advantage of these contraceptive measures. When looking at Cameroon, they could learn from Zimbabwe’s success, taking measures such as subsidizing more contraceptive education programs and developing concrete, structured population policies to ensure that their population growth does not get out of control in the coming years.
Finally, something that both countries can work on is reevaluating the long-standing traditions of having large family sizes, and favoring male children, which perpetuates gender inequality and gender discrimination on a national level.

References


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Women in Nepal and Yemen: Second-Class Citizens

Jillian Cameron

Abstract
This article examines the rights of women and gender inequalities in Nepal and Yemen. Both Nepal and Yemen are far from equality in terms of gender. In both countries, young girls are being married off as young as 8 years old. Women are also discriminated against via religious beliefs and laws, and many women in these two countries lack access to health care and education. This article examines the evolution of women’s rights in key areas based on information provided in the literature and actual data of these two countries.

I. Introduction
Over the last one hundred years, women’s rights have grown significantly in the United States. Despite setbacks such as the enduring wage gap and work place discrimination, reproductive rights have expanded and there are today more women in college than men. The same cannot be said for many developing countries, such as Nepal and Yemen. In many developing countries, women are often treated as second-class citizens, subject to domestic violence and lacking proper health care and education.

This article discusses issues that women in Nepal and Yemen continue to face today and that continue to create inequalities between men and women. Following a brief literature review of studies regarding women’s rights in Nepal and Yemen in the second section, this article will then present some historical and empirical background of both countries in the third section. A discussion of several key issues related to marriage, modern contraception, health and education will constitute the fourth section, before the fifth section provides some conclusions.

II. Brief Literature Review
Women’s rights in developing countries have been researched extensively over the last few decades. However, many women still are not considered equal to men and are not given the same rights as men in many developing countries, including in Nepal and Yemen. This brief literature review summarizes some of the main contributions of the last few years focusing on women’s rights in Nepal and Yemen. A report by the Asian Development Bank (2010) and academic contributions by Guinée (2014) and Ranabhat et al. (2015) focus on Nepal, while Yadav (2009)
and Badahdah (2016) focus on Yemen. Guinée (2014) and Yadav (2009) examine improvements made for women’s rights in Nepal and Yemen, respectively. Badahdah (2016) and Ranabhat et al. (2015) focus on issues that continue to limit rights for women. The report of the Asian Development Bank (2010) covers both, the improvements made and the issues that continue to cause gender inequality.

- Yadav (2009) focuses on how a segmented public in Yemen has affected human development and how the role of women has shifted over the past 20 years. The article examines three main topics: why women work in a gender-segmented public, the effects of women in a segmented public on the relationship between men and women, and ways to rework the public and private system in order to include women. This article also discusses how the role of women in politics has changed from 1990 (when the Islah Party defined the purpose and duties of the “women’s sector” as developmental, cultural or educational) to 2010 (when women play an increasing role in the political spectrum of Yemen).

- A report by the Asian Development Bank (2010) concludes that Nepal has taken progressive steps toward greater gender equality throughout the past five decades. Important legal amendments have been made to strengthen women’s rights in key areas such as citizenship, inheritance, anti-trafficking, and women’s political representation. However, achieving gender equality and transforming Nepal into a more inclusive democracy will also require changes in public attitudes. Policy and program approaches that can contribute to removing these barriers include attention to identifying the excluded, the causes of their exclusion, and appropriate context-specific responses.

- Guinée (2014) explores the ways in which education is being used as empowerment for women in Nepal. Guinée interviewed 23 educated Nepalese women from low-socioeconomic households and examines if and how their education has empowered them in their society. It was found that the sense of empowerment women felt did not come directly from their education but rather from the job and income earned after receiving their education. The article also explored how marriage influences feelings of empowerment for Nepalese women. Guinée argued that an educated woman is more likely than an uneducated woman to expect respect and equality from their spouse.

- Ranabhat et al. (2015) focus on women’s health in Nepal and specifically how women’s health is affected by the Chhaupadi culture. The Chhaupadi culture is prevalent throughout Nepal and part of the broader culture that says that women cannot live in their homes during their menstruation. Ranabhat et al. study how this culture affects women and whether or not this culture leads to health issues. The study concluded that this culture does in fact contribute to health issues such as infections, as women are not able to maintain proper hygiene during their menstruation.

- Badahdah (2016) describes how women in Yemen are systematically oppressed by conservative Islamic laws and by the patriarchal society. Badahdah specifically focuses on restrictions placed on women that are living with HIV. The study revealed that the majority of people in Yemen are uninformed about HIV and living with HIV, thus, view people with the disease negatively. Badahdah suggests that the government in Yemen create programs to educate individuals about HIV and establish basic rights for those living with HIV.
III. Historical and Empirical Background

Nepal, officially known as the Federal Democratic Republic of Nepal, is located in South Asia, landlocked between India and China, with a total land area of 143 thousand square miles. After a two-year independence war, Nepal gained independence from England in 1816. The country continued to be ruled by monarchy until 1951, when a cabinet system was established. This system lasted until 1960 and was later re-established in 1990. In 1996, a Maoist uprising resulted in a decade-long civil war ending in 2008, when Nepal was officially declared a federal democratic republic. The current constitution was established in September of 2015. In 2015, Nepal had a population of 28.5 million.\footnote{This paragraph is based on information provided in the CIA World Factbook section on Nepal, available at: \url{https://www.cia.gov/library/publications/the-world-factbook/geos/np.html}, and World Bank (2016).}

Yemen, officially known was the Republic of Yemen, is located in Western Asia along the Arabian Peninsula, with a total land area of 528 thousand square miles. Yemen became independent from the Ottoman Empire in 1918, and was quickly divided into North and South Yemen by the British in order to protect Aden, the southern most port in Yemen. Marxist policy in Southern Yemen during the 1970s caused a mass exodus into Northern Yemen. The two territories were unified in 1990 and have remained so despite a brief civil war in 1994. The legal system, which was set in place via the adoption of a formal constitution in 1991, is a mix of Islamic law, Napoleonic law, English common law and customary law. However, Yemen has been in an ongoing civil conflict since 2014. In 2015, it had a population of 26.8 million.\footnote{This paragraph is based on information provided in the CIA World Factbook; section on Yemen; available at: \url{https://www.cia.gov/library/publications/the-worldfactbook/geos/ym.html}, and World Bank (2016).}

Figure 1 shows the gross domestic product (GDP) per capita, adjusted for purchasing power parity (PPP) for Nepal and Yemen from 1990 to 2013. In 1990, Nepal had a GDP per capita of $774.59, while Yemen had a GDP per capita of $2,192.43. From the beginning, Yemen has always had a much higher GDP per capita, and due to similar GDP per capita growth, Nepal has continued to lag behind Yemen. However, after years of steady growth, Yemen’s GDP dropped drastically from $4,286 in 2010 to $3,616 in 2011. Despite this drop, Yemen’s GDP per capita has continued to grow positively since 2011. Nepal’s GDP per capita has continued to grow steadily over the past 25 years.

Figure 2 shows the average life expectancy at birth in Nepal and Yemen from 1970-2015. While the two countries started with about the same life expectancy in 1970 (of 40.5 years and 41.1 years, respectively for Nepal and Yemen), Yemen’s life expectancy grew faster than that of Nepal during the 1970s and early 1980s. Hence, by 1985, Yemen’s life expectancy was 4.9 years higher than that of Nepal. However, since the late 1980s, Nepal’s life expectancy grew much faster than that of Yemen. Thus, Nepal overtook Yemen in 1997, and by 2015, Nepal’s life expectancy surpassed that of Yemen by 5.9 years.
Despite considerable data gaps, Figure 3 shows that the adult literacy rates of the two countries have overall been similar. Both countries have made considerable progress, nearly doubling adult literacy rates from the early 1990s to the early 2010s.
IV. Discussion

There are many factors that contribute to gender inequality in Nepal and Yemen. This section addresses four key factors: (1) marriage and domestic violence, (2) religious beliefs and laws that influence perceptions and attitudes about sexual behavior and the access to modern contraceptives, (3) lack of healthcare, and (4) lack of education. Some of these factors play a larger role than others, some have drastically improved over the years, yet others continue to plague their respective countries.

IV.1. Marriage and Domestic Violence

Marriage is one of the most prevalent ways in which men assert their dominance over women, especially in the least developed countries (LDCs) like Nepal and Yemen, where child marriages are common. Women typically have little rights within a marriage and must obey their husbands. Women in LDCs also face high levels of domestic violence.

IV.1.a. Child Marriage

Many government laws in Yemen are based on Shari’ah law, the religious laws of the Islamic faith. Based on Shari’ah law, the minimum age for marriage of 15 years was repealed in 1999. Subsequent attempts to set a minimum age have been rejected by the Yemeni government. Nepal, on the other hand, has a minimum marriage age of 20 years. Despite this minimum age, Nepal has the third highest incidence of child marriage in South Asia. The highest rates of child marriage in Nepal occur amongst those in the Dalit caste, which is the lowest and most disadvantaged caste.

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3 See Tahirih Justice Center (2017).
4 Based on data provided by UNICEF (2016); both Bangladesh and India have higher child marriage rates.
where child marriage rates are as high as 87 percent of women being married before the age of 19 in the Terai region of Nepal. 5

As Figure 4 shows, Nepal and Yemen have overall similar rates of child marriage despite differences in formal laws regarding the minimum marriage age. The graph shows the percentage of women, aged 20-24 that were married by either 15 years or 18 years of age.

- In Nepal, based on a so-called Multiple Indicator Cluster Survey (MICS) of 2013, 10 percent of the women aged 20-24 were married by age 15, and 37 percent were married by 18.
- In Yemen, based on a Demographic and Health Survey (DHS) of 2013, 9 percent of the women aged 20-24 were married by age 15, and 32 percent were married by age 18.

Despite the careful collection of this data, many child marriages go unreported to authorities, and therefore, the data is likely an underestimate of the actual rate of child marriage in both countries.

![Figure 4: Child Marriage Rates in 2013 (percent of women aged 20-24)](source)

Source: Created by author based on data provided in UNICEF (2016).

According to a report by Human Rights Watch (2016), there are several reasons for the persistence of child marriages: poverty, lack of access to education, child labor, social pressures and harmful practices. In Yemen, poor families often feel forced into agreeing to allow their daughter to marry because of monetary incentives. 6 In Nepal, attempts by the government to prevent child marriage have caused rates of “love marriages” to increase. Love marriages occur when young girls agree to marry in order to escape abusive situations at home and social pressures. While arranged child

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5 See Human Human Rights Watch (2016); the Terai region is a lowland region in southern Nepal and northwestern India.
marriage rates are decreasing, love child marriage rates are increasing and thus little is being done to reduce child marriage in Nepal.⁷

**IV.2.b. Rights in Marriage and Domestic Violence**

Due to societal structures in both countries, women are seen as second-class citizens in relation to men, and the rights of women in marriage reflect that standing. In Yemen, laws based on Sharia’ah law give women limited rights in marriage. “Article 40 of Yemen’s Personal Status Law states that a woman must obey her husband in all matters, including not leaving home without his permission and keeping up with domestic chores.”⁸

A report by Human Rights Watch (2016) sites a 2002 survey of 120 Yemenis women that found that more than 28 percent of the sample group had been ordered by their husbands to remain in their homes at some point in their marriage and that 74 percent of the sample group had been verbally abused by their husbands. The Personal Status Law has no stipulation for marital rape and therefore it is legal in Yemen. Another study cited by Human Rights Watch (2016, p. 11) “found that 59 percent of rural women and 71 percent of women living in urban areas said they were physically beaten by their husbands because of family problems.”

Figure 5: Prevalence and Frequency of Domestic Violence in Yemen

![Bar chart showing prevalence and frequency of different types of abuse in Yemen](image)

Source: Created by author based on Ba-Obaid and Bijleveld (2002).

Figure 5 shows the results of a study by Mohamed Ba-Obaid and Catrien Bijleveld (2002), which examined domestic violence in Yemen. The figure outlines the prevalence and frequency of different types of abuse, prevalence in terms of overall percentage and frequency in terms of

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percentage of occurrence on a daily basis. The study also looked at the most frequent perpetrator of the abusive acts and found that person to be the husband, followed by a brother or the father.\(^9\)

The Nepalese government has made several attempts to reduce domestic violence and provide more rights for women in a marriage. In 2009, the government passed the Domestic Violence Act that redefined domestic violence into broader terms of “any form of physical, mental, sexual, or economic harm perpetrated by one person on another with whom he or she has as a family relationship, including acts of reprimand or emotional harm.”\(^{10}\) Despite this Act and the Gender Equality Act, which raised the age of consent for marriage to 20 years, women still face oppression and violence in marriages. According to law, Nepalese women cannot divorce their husbands for marital rape. The husband, on the other hand, can divorce his wife simply on the grounds of having a sexually transmitted disease.\(^{11}\)

Figure 6 shows the results of a study by Paudel (2007) on domestic violence experienced by women in Nepal. In this study, physical violence is described as beating, slapping or kicking; economic violence as deprivation of resources; psychological violence as scolding and mental torture; and sexual violence as sexual abuse or forced sex.

### Figure 6: Domestic Violence Experienced by Women in Nepal (total incidents among adolescent, youths and adults, percent)

![Bar chart showing domestic violence incidence](chart.png)

Source: Created by author based on Paudel (2007).

Despite similar rates of violence against women in Nepal and Yemen, differences in Nepalese and Yemeni society and laws seem to have a profound impact on women’s perception of domestic violence. According to the World Bank (2016), 32.4 percent of women in Yemen believe that a

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\(^{10}\) Pandey (2016), p. 813.

\(^{11}\) Asian Development Bank (2010).
husband is justified in beating his wife after refusing sex, while only 0.2 percent of women in Nepal believe in that justification. This difference in opinion can be linked to differences in laws regarding martial rights and societal standards. In Yemen, a woman can lose her right to divorce her husband if she leaves the house without his permission,\textsuperscript{12} whereas in Nepal, the government has taken steps to reform martial laws and created laws to protect women.

\section*{IV.2. Religious Beliefs and Laws}

There are various religious beliefs and laws that influence perceptions and attitudes about sexual behavior in Nepal and Yemen. In Nepal, these attitudes come from Hindu and Buddhist traditions, in Yemen they come mostly from Shari’ah law.\textsuperscript{13} These beliefs and laws typically have a direct impact on fertility rates and access to contraceptives.

\subsection*{IV.2.a. Fertility Rates}

Figure 7 shows the progression of the fertility rates in Nepal and Yemen from 1960 to 2014. Since 1960, Nepal’s fertility rate has continued to decrease from about six children per woman in 1960 to about two children per woman in 2014. On the other hand, Yemen’s fertility rate increased from about 7.5 children per woman in 1960 to its peak of close to nine children per woman in 1984, followed by a dramatic decrease. Today, the fertility rate in Yemen is about four children per woman.

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{figure7.png}
\caption{Total Fertility Rate (births per woman)}
\end{figure}

Source: Created by author based on World Bank (2016).

Due to Yemen’s high fertility rate, Yemen has one of the fastest growing populations in the world. This high fertility rate is not only contributing to overpopulation but is also “detrimental to both maternal and infant health.”\textsuperscript{14}

\textsuperscript{13} Respectively for Nepal and Yemen, see Menger et al. (2015) and Human Rights Watch (2011).
\textsuperscript{14} Riniker (2012) p. 4.
Figure 8 displays the birth rates per 1,000 women, aged 15 years to 19 years from 1960 to 2014. Similar to the overall fertility rate, Yemen experienced an increase in most of the 1960s, followed by a moderate decline from 1968 to 1992, after which it declined rapidly, reaching an adolescent birth rate of 62 births per 1,000 woman. Nepal’s adolescent birth rate increased from 1960 until 1993, that is, much longer but far more moderately than in Yemen, after which it also decreased rapidly to reach 72.5 children per 1,000 women in 2014. These still high adolescent birth rates reflect the high child marriage rates shown in Figure 4 above.

**Figure 8: Adolescent Birth Rates (births per 1,000 women ages 15-19)**

![Graph showing adolescent birth rates for Nepal and Yemen from 1960 to 2014.](image)

Source: Created by author based on World Bank (2016).

**IV.2.b. Access to Contraceptives**

Lack of access to contraceptives, as well as inadequate education regarding the benefits and uses of contraceptives, continue to plague both Nepal and Yemen. Of the 40 percent of college-age men that “reported engaging in premarital sex … only 57% of these [men] reported using a condom during first intercourse.” Menger et al. (2015) also found that the majority of Nepalese women have heard of common contraceptives but very few actually use contraceptives. Furthermore, most Nepalese women have never been to a gynecologist or have only been during pregnancy. This is partly due to the inability to pay for medical bills and the lack of education regarding reproductive health.

In Yemen, it is very rare for males and females to use contraceptives. However, according to Riniker (2012, p. 4), the percent of usage has dramatically increased from only 7 percent in the 1990s to 23 percent in 2003. Despite this increase, over three-quarters of the Yemini population did not have access to contraceptives or were uninformed about their uses in the early 2000s. Like in Nepal, the majority of Yemeni people, especially females, are not properly educated on

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contraceptives and cannot afford to see a physician. A shortage of physicians and the lack of help from the corrupt government make accessing contraceptives even more difficult. Based on Riniker (2012), the most commonly used form of birth control is prolonged breast-feeding, which can delay the menstrual cycle.

Figure 9 provides all the data available on the prevalence (in percent) of modern contraceptives of women ages 15-49 years in Nepal and Yemen. It shows some progress over time in both countries, though the use of modern contraceptives is still low, especially in Yemen.

**Figure 9: Prevalence of Modern Contraceptives (percent of women ages 15-49)**

Source: Created by author based on World Bank (2016).

**IV.3. Inadequate Health Care**

As is reflected in declining, but still high maternal mortality rates shown in Figure 10, inadequate health care is another key problem for women in Nepal and Yemen, especially as the lack of contraceptives helps to spread sexually transmitted diseases (STDs). In Nepal, Hindu and Buddhist values limit “access to education, ability to control sexual relationships and acceptability in discussing sex and sexual health.”

Menger et al. (2015) also come to the conclusion that over 60 percent of affected women are unaware of carrying STDs. Education about STDs and contraceptives is the primary way STD rates and the fertility rate will decrease.

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IV.4. Lack of Education

Education is the most influential way to change the lives of women in LDCs. Both child marriage and reproductive health can be positively influenced by the accessibility of education for young girls and women. Education alone has not been widely studied; rather, it is most often studied in terms of how education can empower women to seek a life outside of the home. In both Nepal and Yemen, education is something that very few girls, especially those who live in poverty, are able to obtain. Retention plays a big role in the lack of education because many girls are not able to continue attending school because they are to be married or have to work.

Figure 11: Primary Education, Pupils (percent of female)

Source: Created by author based on World Bank (2016).
Figure 11 shows that it has only been in recent years that girls make up close to 50 percent of the students in primary education in Nepal; Yemen has yet to reach that milestone. Most of the females that make up this percentage in Yemen come from relatively wealthier families, as it is most often the poorest of girls that do not receive an education.

V. Conclusion

The women of Nepal and Yemen are far from having equal rights as men. Despite progress in Nepal, in the case of Yemen, it is quite possible that women will never be equal to men as long as Shari'ah law is enforced. However, by creating equal access to education, rates of child marriages and domestic violence are likely to decrease. Creating access to health care and contraceptives, as well as informing the public on the realities of sexually transmitted diseases, will prevent discrimination based on reproductive health and improve the health of newborn children and their mothers.

Overall, the most effective way to transform the lives of women, not only in Nepal and Yemen, but in all developing countries more generally, is to educate them. Education provides women with a life outside of the home and gives them the power to make better-informed decisions. Though education alone cannot change the laws and beliefs of countries like Nepal and Yemen, by giving women an equal opportunity to succeed, prevailing attitudes about gender roles can be made more progressive and hence, will result in more equal rights in the future.

References


