

2019

Alleviating Poverty in Sub-Saharan Africa

owen dubeck

Recommended Citation

dubeck, owen, "Alleviating Poverty in Sub-Saharan Africa" (2019). *CMC Senior Theses*. 2164.
https://scholarship.claremont.edu/cmc_theses/2164

This Open Access Senior Thesis is brought to you by Scholarship@Claremont. It has been accepted for inclusion in this collection by an authorized administrator. For more information, please contact scholarship@cuc.claremont.edu.

Claremont McKenna College

Alleviating Poverty in Sub-Saharan Africa

submitted to
Professor William Ascher

by
Owen Dubeck

for
Senior Thesis
2018-2019
4/29/2019

Introduction:

In 1990, over 1.8 billion people were living in extreme poverty, a figure that has fallen to less than 800 million people today (World Bank D 2018). While most of the world has been able to dramatically reduce extreme poverty rates, Sub-Saharan Africa has failed to do so and is the only region in the world with more people living in extreme poverty than thirty years ago (World Bank D 2018, 2). Half of the world's extreme poor live in Sub-Saharan African countries, and this figure is expected to be 90 percent by 2030 (World Bank A 2018, 1).

Although Sub-Saharan Africa has been plagued by civil wars, resource exploitation, and oppressive governments, the region has seen substantial economic growth and health advances in the past fifteen years. Life expectancy has increased from 49.9 years in 1990 to 60.4 years in 2016 and GDP per capita has increased by over 58 percent during this same time period (World Bank C 2018). It is in the hands of policy-makers to ensure that economic growth translates to alleviating poverty.

This thesis will develop a policy framework for alleviating poverty by drawing from countries that are performing surprisingly well and poorly in the region. A regression that isolates factors that are out of the hands of policy-makers will determine which countries are performing better than others. Four countries that are performing surprisingly well will be chosen from the regression results and closely analyzed to see how successful policies can be adapted for other Sub-Saharan African countries struggling to alleviate poverty. Four countries that are performing surprisingly poorly will also be closely analyzed to see which policy failures are most hurting the poor.

The thesis will focus on education, health, and agricultural policies. Improvements in education can be extremely effective for lifting people out of poverty. Primary school enrollments in Sub-Saharan Africa have increased by 25 percent since 1990 (World Bank C 2018). However, many students in Sub-Saharan Africa fail to graduate from primary schools because it is either unaffordable, non-existent, or does not seem as beneficial as working. Many countries struggle with keeping girls in schools and would benefit substantially from programs that promote equity in education.

As mentioned before, life expectancy has substantially increased in Sub-Saharan Africa. However, the question remains whether the poor are being provided equal access to health resources and being cared for better than they have been in the past. Health resources are often focused on urban centers, where the poor in Sub-Saharan Africa generally do not live, so it will be important to be cognizant of where resources are being directed when analyzing health policies. Providing health resources to rural areas can often be a challenge, especially in countries with poor roads. Policies that find efficient means of training doctors and providing resources to harder to reach regions will stand out as being particularly helpful for poverty alleviation.

Agriculture accounts for over 60 percent of employment in Africa and also functions as a food source for those in extreme poverty. It is key that policy-makers implement policies that increase food security and incomes of those in extreme poverty. Like with health and education, it is important that these programs benefit the poor. Agricultural policies that help larger businesses are not particularly helpful for smallholder farmers in poverty. Climate change is a major threat to alleviating poverty and poses a significant threat to destroying the livelihoods of

farmers who are both already in poverty or barely out of it. It is important for country leaders to recognize the threat of climate change and focus on policies that mitigate this risk for the poor.

The final section of this thesis will identify how countries can better allocate expenditure. More specifically, the thesis will suggest whether education, health, or agricultural sectors should be receiving more or less funding based on expected rates of return and feasibility of policy successes.

Data:

The sample consists of twenty four Sub-Saharan African countries. Countries that had sufficient human development index data from 2017 were included. This sample accounts for approximately half of all countries in Sub-Saharan Africa, and given the sample countries' geographic, economic, and cultural diversity, it should accurately represent the region as a whole. The data used in this thesis include times series data for 24 Sub-Saharan African countries in the years 1995, 2000, 2005, 2010, 2015, 2016, and 2017.

The thesis uses data from the United Nations country specific development reports, the World Bank Database, and the Uppsala Conflict Data Program. Since this analysis is most interested in which countries are doing the best to improve the wellbeing of their citizens, the main variable of focus is the Human Development Index, which has been adapted in this model to isolate the effects of GDP. Therefore, the adjusted human development index is calculated using the life expectancy index and the education index. Increased average years of schooling and life expectancy are both excellent poverty indicators. The difference between the two equations can be seen below:

$$\text{Human Development Index Equation} : \sqrt[3]{\frac{(\text{Life Expectancy} - 20)}{(85-20)} \cdot \left(\frac{\text{Mean Years of Schooling}}{15} + \frac{\text{Expected Years of Schooling}}{18} \right) \cdot \frac{[\ln(\text{GNI pc}) - \ln(100)]}{[\ln(75,000) - \ln(100)]}}$$

$$\text{Adjusted Human Development Index Equation} : \sqrt[2]{\frac{(\text{Life Expectancy} - 20)}{(85-20)} \cdot \left(\frac{\text{Mean Years of Schooling}}{15} + \frac{\text{Expected Years of Schooling}}{18} \right)}$$

Those who are more educated have more opportunities and resources to lift themselves out of poverty. Therefore, the adjusted human development index is a suitable measure for how quality of life is changing in a country and whether the country is effectively working towards alleviating poverty.

The dataset includes conflict data from the Uppsala Conflict Data Program, which provides the most comprehensive estimates on death tolls from conflict in Africa. The database measures all fatalities resulting from state-based armed conflict, non-state conflict (defined as battle-related deaths), and one-sided violence. The conflict data in this study's dataset were calculated by taking a five-year fatality average based on Uppsala's "best estimate of deaths" parameter. This was necessary because of the high variation in fatality numbers from year to year. For example, in the year 2000, 50 conflict-related fatalities were recorded for Sierra Leone in the database. This figure would not accurately describe the time period because the five-year average is 2,370 conflict-related fatalities per year. Such examples are likely because of a lack of data, which causes underreporting of deaths. A five-year average allows for the most accurate depiction of conflict-related deaths during a given time.

GDP per capita, percentage of people living in rural areas, population size, and net development assistance and official aid received were all collected through the World Bank Database. All of these variables were chosen because they contribute towards a change in HDI and are largely out of the hands of policymakers. Net development assistance and official aid

received provides insight into how much outside help a given country is receiving. Countries with high levels of foreign aid and similar levels of conflict are likely expected to perform better than those with low levels of foreign aid.

Between insufficient data and clear biases in reporting, quite a few shortcomings exist with using data on Sub-Saharan African countries. The region is known for underreporting fatalities and manipulating conflict data has frequently been used as a political ploy (Williams 2011, 24). Often no data exists at all, as was the case with precipitation variation. Including historical data on precipitation would have been helpful; however, insufficient data exist at this time.

Results:

The goal of this section is to determine which Sub-Saharan African countries are performing surprisingly well when it comes to improving the lives of their citizens and which are not performing well at all. It is important to investigate this given the extraneous variables that can affect people's wellbeing but are not in the hands of policymakers.

Four multivariate linear regressions with panel data were run in order to see which countries were doing surprisingly well or poorly. The dependent variable for models one and two is HDI, while the dependent variable for models three and four is adjusted HDI. Model one included GDP per capita as an independent variable, whereas model two did not. Similarly, model three accounted for ln GDP per capita as a variable, whereas model four did not. The four equations can be viewed below:

$$\text{Model 1: } HDI = A * (\text{GDP per capita}) + B * (\text{Rural Population}) + C * (\text{Population})$$

$$+ D * (\text{Net Official Development Aid Received}) + E * (\text{Deaths from Conflict}) + \text{Constant}$$

$$\text{Model 2 : HDI} = B * (\text{Rural Population}) + C * (\text{Population}) + D * (\text{Net Official Development Aid Received}) \\ + E * (\text{Deaths from Conflict}) + \text{Constant}$$

$$\text{Model 3 : Adjusted HDI} = A * \ln(\text{GDP per capita}) + B * (\text{Rural Population}) + C * (\text{Population}) \\ + D * (\text{Net Official Development Aid Received}) + E * (\text{Deaths from Conflict}) + \text{Constant}$$

$$\text{Model 4 : Adjusted HDI} = A * \ln(\text{GDP per capita}) + B * (\text{Rural Population}) + C * (\text{Population}) \\ + D * (\text{Net Official Development Aid Received}) + E * (\text{Deaths from Conflict}) + \text{Constant}$$

Model one was deemed inferior to the others because it failed to isolate the effects of GDP per capita. GNI per capita is included in the HDI calculation, and GDP was included as an independent variable. Model two eliminated GDP per capita as an independent variable entirely; however, a better model could be created using the adjusted HDI variable.

Models three and four use the adjusted HDI variable as a dependent variable and only vary in whether they used ln GDP per capita or not as an independent variable. Because model three isolates the effects of ln GDP per capita, it is the strongest model. The equation for model three after running the regression can be seen below:

$$\text{Adj. HDI} = 0.0560587 * \ln(\text{GDP per capita}) - 0.0003383 * (\text{Rural Population}) - 5.44e^{-10} * (\text{Population}) \\ + 4.15e^{-11} * (\text{Net Official Development Aid Received}) - 5.10e^{-6} * (\text{Deaths from Conflict}) + 0.0675378$$

GDP per capita and HDI have a positive correlation. This makes sense; as a country's economy grows, the wellbeing of its citizens typically improves. As the percentage of people living in rural areas increases, adjusted HDI decreases. This falls in line with previous research on rural vs. urban poverty rates and makes intuitive sense that average years of schooling (a

component of adjusted HDI) is lower in rural areas. Population growth is also negatively correlated with adjusted HDI. Net Official Development Aid Received is positively correlated with adjusted HDI, meaning that aid money is likely creating net positive change and helping people it is intended to help. How effective aid money is in the region and how efficiently it is used are topics for another thesis. All one can conclude from this regression is that the aid money is net beneficial in the region. Lastly, as the number of fatalities from conflict increases, the adjusted HDI decreases. This means that armed conflict deteriorates the wellbeing of citizens in a given country, which also makes intuitive sense.

The R-Squared of the regression is 0.3623, meaning that 36.23 percent of the variation in the adjusted HDI can be accounted for by factors that are out of the hands of policymakers.

The next step is to use this equation and each country's most recent data for each independent variable to come up with a predicted adjusted HDI value. The predicted values will explain how well we would expect this country to be doing, given all of the control variables. Then, the real adjusted HDI value will be subtracted from the predicted adjusted HDI value. Countries with negative values are performing worse than expected, while countries with positive values are performing better than expected. The table below shows the results:

Difference in Adjusted HDI and Adjusted Expected HDI (Table 1)

Country	Difference in Adj. HDI
Angola	0.069
Central African Republic	0.055
Chad	-0.019
Ethiopia	0.145

Ghana	0.151
Kenya	0.223
Mozambique	0.101
Tanzania	0.165
Cameroon	0.123
Liberia	0.159
Nigeria	0.136
Madagascar	0.224
Senegal	0.084
Sudan	-0.012
Uganda	0.187
Namibia	0.091
Rwanda	0.167
Zambia	0.161
Guinea	0.045
Malawi	0.174
Niger	0.005
Zimbabwe	0.179
Sierra Leone	0.051
Mauritania	0.0582

The top four performers are bolded and the bottom four are highlighted

Chad, Sudan, Niger, and Sierra Leone are the weakest performers in the region, while Kenya, Uganda, Madagascar, and Zimbabwe are performing best. Most countries have positive values, so as a whole, the region is doing better now than it has in the past.

It is worth noting that most of the countries that are performing surprisingly well are wealthier than most of the countries that are performing surprisingly poorly. In order to ensure that the model is correctly controlling for GDP, it is important to rerun the model in a way where a country's wealth is less impactful. Replacing $\ln(\text{GDP})$ with $\ln(\text{GDP})^{1/2}$ satisfies this need. The new equation is as follows:

$$\begin{aligned} \text{Adj. HDI} = & 0.1121175 * \ln(\text{GDP per capita}) - 0.0003383 * (\text{Rural Population}) - 5.44e^{-10} * (\text{Population}) \\ & + 4.15e^{-11} * (\text{Net Official Development Aid Received}) - 5.10e^{-6} * (\text{Deaths from Conflict}) + 0.0675378 \end{aligned}$$

Even after adjusting the model, Kenya, Zimbabwe, Madagascar, and Uganda are still the top four performers. Chad, Niger, and Sierra Leone are all still in the bottom four, while Sudan is fifth. Therefore, the findings are insensitive to the particular formation and robust over different specifications of the model.

One final regression was run to test which countries have been performing surprisingly well or poorly since 2005. Many of the policies that will be analyzed in this thesis span the early 2000s until the present day, so it is important to confirm that the eight countries chosen follow a similar trend to the past two regressions. New independent and dependent variables were generated by taking each value in 2017 and subtracting it from its corresponding value in 2005. Therefore the new dependent variable is difference in adjusted HDI between 2017 and 2005. Likewise, all of the independent variables are differences between their respective 2017 and 2005 values.

After running the linear regression, the equation for predicted HDI is as follows:

$$\begin{aligned} \text{Adj. HDI} = & 0.067144 * \ln(\text{GDP per capita})^{1/2} + 0.0016787 * (\text{Rural Population}) - 3.74e^{-10} * (\text{Total Population}) \\ & - 1.84e^{-12} * (\text{Net Official Development Aid Received}) + 0.0014658 * (\text{Log Deaths from Conflict}) + 0.1085994 \end{aligned}$$

Like in the previous regressions, the difference in predicted adjusted HDI is subtracted from the difference in adjusted HDI. Kenya, Zimbabwe, and Uganda are found to be performing surprisingly well, whereas Niger, Chad, Sierra Leone, Sudan, and Madagascar are performing surprisingly poorly. Madagascar was previously found to have been performing surprisingly well, so it will be interesting to see why this is found to be different when comparing 2017 to 2005. Otherwise, this regression further adds to the robustness of the model and confirms that suitable countries have been selected for analysis.

Policy Findings:

This section will discuss trends in government spending towards education, health, and agriculture in order to determine whether resources are being properly allocated to benefit those in need. Based on the regression analysis, Chad, Sudan, Niger, and Sierra Leone are four countries that are performing surprisingly poorly given the control variables. Conversely, Madagascar, Zimbabwe, Kenya, and Uganda are performing well according to the analysis. This section will highlight the policy choices over the past fifteen years that have been either successful or unsuccessful.

Sierra Leone:

Education: Although the government of Sierra Leone has increased the amount of funding going on education over the past ten year, the country seems to be misallocating those funds in favor of its wealthier citizens. From 2007-2015, Sierra Leone gradually increased expenditure on primary and secondary education by 50 percent (World Bank C 2018). However, in recent years, funding towards both have significantly dropped off. Meanwhile, expenditure on

tertiary education has quadrupled since 2007 and now accounts for around 52 percent of total education expenditure (World Bank C 2018). The total amount of spending put to tertiary education exceeds that of primary education. Sierra Leone spends on average US\$33 on each primary student and over US\$140 per tertiary student.

Tertiary spending per student has exceeded that of primary students for the past five years and shows a possible trend of favoritism towards those who are wealthier. In Sierra Leone, it is mostly the country's elites who have the privilege of attending a university. Mean years of schooling averages only around 3.5 years, and for many, tertiary education is not an option (United Nations Development Programme U 2018, 2). Many citizens of Sierra Leone live below the poverty line and have to focus on survival instead of investing time into education.

Although Sierra Leone is directing a significant portion of its education spending to tertiary education, Njala University and the University of Sierra Leone, the two main universities in the country, are in disarray. Njala University is known to graduate qualified teachers and health professionals. However, most teachers have not been paid in over a year and the government has cut the school's annual budget to \$25 per student (Thomas 2018, 1).

The recent budget cuts are likely a sign of a budget shift to primary and secondary education levels. President Julius Maada Bio announced in 2018 a five-year plan to implement universal public education in Sierra Leone (Thomas 2018, 2). Although free education is a huge step for the country, many students will still be excluded because of textbook fees, uniform costs, and the need to help their families with work. Lastly, the budget cuts to Njala University will mean that there will be fewer qualified teachers teaching primary school students. Further research on the impact of this policy change should be conducted five to ten years from now.

Health: In terms of health, Sierra Leone has significantly increased its health expenditure over the past ten years (World Bank C 2018). From 2007 to 2015, Sierra Leone has increased its per capita government health expenditure by 192 percent (World Bank C 2018). Sierra Leone has seen significant progress with life expectancy and infant mortality rate, as has most of the Sub-Saharan African region. What stands out is the country's inability to combat the illnesses that affect most of its population. In 2007, malaria, lower respiratory infections, and neonatal disorders were the leading causes of death in Sierra Leone (Institute for Health Metrics and Evaluation 2017). Today this list is unchanged and the rates of death have only slightly dropped. In Sierra Leone, people die of malaria with seven times more frequency than the region's average (Institute for Health Metrics and Evaluation 2017). Sierra Leone is a classic example of a country that made dramatic changes to its health budget with good intentions but failed to execute in categories that most benefited its citizens.

Three leading reasons exist for why health expenditure would not reach those most in need. The first is that the policy-makers failed to direct the money in the most effective direction. It is also possible that much of this money was lost to corruption. Lastly, the country may lack the number of qualified health workers needed to reach more of the population. Regardless, Sierra Leone has failed to help its citizens proportionally to the amount of added money they are investing.

Niger:

Education: Niger spends the majority of its total education expenditure on primary education, which is appropriate given that primary school enrollment rates exceed that of any

other level of education. Similarly, more money is put towards secondary education than tertiary education because more students exist at that level. However, looking at the money spent per student at each level, it appears that Niger may also be misallocating funds. Niger is spending on average \$85 per primary student, \$210 per secondary student, and nearly \$1800 per tertiary student each year (World Bank C 2018). The dropout rates are so high in Niger that very few students are making it to the secondary or tertiary educational levels (World Bank C 2018). Given that little funding per student is allocated at the primary school level, this may mean that schools have large class sizes, underqualified teachers, and weak physical infrastructure. All of these factors contribute to a higher number of kids dropping out of school.

The exorbitant spending at the tertiary level favors those who are wealthiest in the country. Resources that could be going towards those who are most in need are instead being directed towards the few who have the privilege to attend higher education.

Niger has the lowest literacy rate in the world and struggles at the primary school level to provide qualified teachers (Borgen 2016, 1). In 2017, only 65 percent of teachers in Niger were considered qualified to teach, and although twice as many students are enrolled in primary school today in Niger, there has not been an increase in funding (Global Partnership for Education 2018). Niger has performed worse from an education policy perspective than any other country in this group of eight because it has failed to make any effort to educate more teachers or allow more children to attend primary school.

Health: Similarly to education spending, health expenditure per capita has remained relatively unchanged over the past ten years in Niger (World Bank C 2018). In a country with

high rates of poverty and a life expectancy rate of 60 years, a more robust healthcare system is needed (United Nations Development Programme P 2018, 2). Like in Sierra Leone, the top three leading causes of death in Niger have remained unchanged from 2007 to 2017. Death rates for malaria, the single leading cause of death in Niger, have increased by 7.9 percent over the past ten year (Institute for Health Metrics and Evaluation 2017). Across Sub-Saharan Africa, access to quality health facilities has significantly improved and it is rare to see the leading cause of disease become worse. Even in the other three examples of countries that are performing poorly, none is experiencing higher death rates from their leading causes of death.

Niger has failed to increase education or health spending over the past ten years and will need to do so in order to help lift its citizens out of poverty. The country is most in need of qualified teachers and basic health facilities that can effectively combat malaria and other leading killers.

Madagascar:

Education: Madagascar follows a similar educational spending trend to Niger. It spends a majority of its education expenditure on primary education and the least on tertiary education. The amount of spending per student at each level also follows the same trend, with most money per student being dedicated to tertiary students, then secondary, then primary. However, Madagascar is investing far less money in students at every level. In recent years, only \$26 is allocated to each primary school student annually (World Bank C 2018). Mean years of schooling is 6.1 years, greater than Sierra Leone and Niger, so it is surprising that it is investing less and seeing better results. In 2017, only 15 percent of teachers were considered qualified, and the country had 273 students for each qualified teacher (Global Partnership for Education 2018).

In recent years, Madagascar has significantly increased the amount of money being directed toward education.

Madagascar tested as a country performing particularly well and indications exist that the country's increasing investment in education over the past ten years is paying off. Madagascar is comparably poor to Sierra Leone, Niger, Chad, and Sudan and yet is the only one of these countries investing a significant amount of money in education. The Brookings Institute created a system called the Africa Learning Barometer for estimating the effectiveness of primary school education across Sub-Saharan African countries and found that in Madagascar, 23.6 percent of school children were "not learning to read" and 6.5 percent were "not learning math." According to the study, Madagascar is outperforming countries that are far wealthier in these categories. This means that Madagascar has found a way to successfully invest in education and provide a decent education to its students, despite the disadvantages coupled with being an impoverished country. In some ways, Madagascar can be seen as an outlier in this respect. However, it is also important to note this as an example of the enormous returns on investment for impoverished countries investing in education.

Health: Madagascar is spending 100 percent more on health per person than five years ago, which has probably contributed to an increase in life expectancy from 63.4 to 66.3 years (World Bank C 2018). A healthier population means that children can stay in school longer and that people are given a better chance of lifting themselves out of poverty. Madagascar now spends around 15 percent of its annual budget on health, a higher percentage than any of the other eight countries (World Bank C 2018). As compared to five years ago, out-of-pocket costs have only gradually increased for Malagasy people, while government spending per person has

more than doubled. This means that people can afford greater access to healthcare and are not burdened by out-of-pocket costs.

It would be a misrepresentation to categorize Madagascar's healthcare system as a success. The leading causes of death have not changed in the past ten years and some have become worse. These increases in health spending are fairly recent, so more research should be done on this topic in the next ten years to see if these investments pay off.

Madagascar has not had a substantial violent conflict in its history. However, it is one of the poorest Sub-Saharan African countries and performs horribly in regards to education, health, and HDI parameters. Political instability has been found to be an important factor in halting the growth of the country. Over the past ten years, HDI growth has closely followed GDP growth, and HDI growth has significantly slowed during times of political crisis (Unicef Madagascar 2017, 11). During the 2008-2013 political crisis, key expenditure allocations were frozen and unable to reach those in need (Unicef Madagascar 2017, 12). Given the recent political instability from the 2018 elections, it is expected that growth will again be slow in Madagascar. This is a unique case in that Madagascar seems to have established effective policies that have proven to grow the economy and raise the HDI; however, the country continues to experience periods of political instability during which the money is not reaching its intended targets.

Zimbabwe:

Education: Zimbabwe spends around 30 percent of its total government expenditure on education, far more than any of the other eight countries (World Bank C 2018). Around US\$1.1 billion (90 percent) of the total education expenditure is going towards teachers' salaries.

Zimbabwe invests mostly in primary education and the least in tertiary education. It spends on

average US\$200 per primary student, which is close to 10 times more than that of Madagascar. It is investing even more heavily in secondary and tertiary students at US\$323 and US\$2345 per student annually (World Bank C 2018). This investment has translated into a strong increase in average years of schooling over the past ten years and in 2017, it is expected that a Zimbabwean young person will attend school for 8.1 years.

In countries that are performing both well and poorly, more money is dedicated per person towards higher levels of education. This begs the question of whether Sub-Saharan Africa as a whole has an issue with directing resources towards higher class citizens or that higher education is inherently more expensive. It is possible that tertiary schools require more physical infrastructure, computers, software, career services resources, and student housing, whereas primary schools do not. This would explain why education at this level costs so much more. Teachers at higher levels of education have to be more qualified and are likely paid a higher salary. Therefore, primary schools may cost less per person because they require less expensive resources. Similar spending distributions are seen across other continents. In countries like Germany, Guatemala, and Chile, more money per student is dedicated to tertiary education. However, it is rare to see a country dedicate more total expenditure to tertiary education than in any other category.

Health: Although Zimbabwe has only slightly increased its health expenditure per capita over the past ten years, the country has seen significant progress in targeting its most deadly diseases. HIV/AIDS has historically been the leading cause of death in Zimbabwe. However, from 2007 to 2017, the country has been able to reduce HIV/AIDS deaths by over 83 percent (Institute for Health Metrics and Evaluation 2017). In 2000, Zimbabwe implemented a three

percent business tax dedicated to AIDS programs (UNAIDS 2015, 1). A group of representatives who specialize in the healthcare industry was appointed to manage the NAC, a committee in charge of all the finances from the three percent tax. After public concern over corruption and misplaced finances, the NAC started publicly publishing their financial records in order to increase accountability (Bhat et al. 2016, 5). This program has proven to be extremely effective and has increased the country's domestic AIDS prevention financing by 40 percent (UNAIDS 2015, 1). The public was in favor of this policy because it both directly targeted a disease during a time of crisis and was structured as a fixed business tax, a method that worked well in a 1992 drought bill (Bhat et al. 2016, 2). Zimbabwean people saw the bill as a "homegrown solution" and were in favor of not having to rely on international donors (Bhat et al. 2016, 5). Zimbabwe has also directed a large amount of foreign aid towards AIDS prevention. These two fundraising strategies represent an effective way in which a country can combat its most deadly diseases. The rates of HIV and AIDS have been reduced to the point where the country is no longer in crisis, so it would probably be responsible to phase out the three percent tax into a general health bill. It may be that most money should be put towards HIV/AIDS, but the money should be flexible.

Agriculture: Zimbabwe is investing heavily in the future of agriculture, but this may not help its poorest citizens. The government invests mostly in disease and pest control and farm mechanization. It is currently developing large scale projects to produce maize and soybeans (Zimbabwe Ministry of Finance 2017, 113). Although these projects will increase the amount of agricultural output in the country, it is not necessarily beneficial to poorer farmers because these projects will rely more on machinery than human power (Tichakunda 2018, 80). The government reports mention little about stability support for poorer farmers. Countries like Uganda invest

heavily in subsidies for farmers who are affected by market volatility and climate change (Uganda Ministry of Finance, Planning, and Economic Development 2018, 98), however, Zimbabwe has no such mention of this type of support.

Kenya:

Education: Kenya has the strongest education system of any country viewed in this study and has seen significant policy success over the past twenty years. In Kenya, 96 percent of teachers are qualified to teach and close to 100 percent of children graduate from primary school (Global Partnership for Education). The pupils to trained teacher ratio has gone from 43 in 2009 to 30 in 2015. Since implementing universal free primary education in 2001, Kenya has embarked on an ambitious campaign to train its teachers. That same year Kenya established a framework for properly training teachers across the country (Hardman et al. 2011, 672). The Kenyan government has invested heavily in this initiative since 2001 and has seen significant success with the quality of education. The quality of education in Kenya is unparalleled to any of the other seven countries, with only 9.6 percent of students “not learning” (Brookings Institute 2018). The overwhelming majority of students in Kenya are now being taught by a qualified teacher and are receiving a proper education.

Kenya spends more money per student on each level of education than any other country studied in this thesis (United Nations Development Programme I 2018, 2). Few data exist on the number of students at each level of education, so it is difficult to compare spending trends to the other countries. However, it is important to point out that Kenya consistently spends more money on secondary education than on primary education (World Bank C 2018). This is surprising because it is highly unlikely more students attend secondary school, especially since the mean

years of schooling in 2017 is only 6.5 years (United Nations Development Programme I 2018, 2).

Sufficient data on primary school enrollment exist, so one can compare cost per primary student per year with other countries. Kenya spends on average \$144 per student per year on primary school children, a far higher figure than those of Sierra Leone, Niger, and Madagascar. Extra funding means more resources for students and individualized attention because of smaller class sizes. This money has also gone towards teacher training, a spending strategy that has proven extremely effective.

In 2003, Kenya implemented a free primary education program with the goal of achieving universal primary education in the years to come (Abuya et al. 2015, 2). Kenya announced this policy one month before implementation and did not allow ample time to increase teaching infrastructure and employ more teachers. Instead, the number of students enrolled in primary school increased from 5.6 million students to 7.3 million students (Abuya et al. 2015, 5). Kenyan officials would have benefitted from a research period on the anticipated effects of this policy and from collaborating with Kenyan primary school teachers. In the five years after the implementation of the policy, Kenya embarked on a nationwide campaign to train more teachers (Mackatiani et al. 2016, 59). Since then, Kenya's trained teacher to pupil ratio has progressed towards being one of the strongest in the region.

Kenya saw success with training teachers through its Kenyan Education Sector Support Programme and School Empowerment Program. Together, the programs trained 18,000 heads of school in the country (Hardman et al. 2011, 672). Each head of school was trained in both school management and given the tools to provide training workshops to their own teachers. These

policies can serve as a model for other countries that struggle with student to qualified teacher ratios.

Health: Since 2009, Kenya has doubled the money per capita it has put towards health. Kenya invests significantly more in health than the countries that have been looked at thus far, and it has implemented effective policies that have created substantial change throughout the population.

Similarly to Zimbabwe, Kenya has been able to dramatically reduce the fatality rate of AIDS in the country, in addition to its top five other fatal diseases (Institute for Health Metrics and Evaluation 2017). Nationwide AIDS prevention programs have contributed towards training more healthcare professionals and equipped facilities with the necessary materials to combat the disease (Merab 2017, 1). Kenya has also invested heavily in an AIDS prevention drug that will be given to 200,000 Kenyans at risk of contracting HIV/AIDS (Merab 2017, 1). Preventive policies of this sort are important because they stop people from contracting and spreading the disease in the first place. Kenya has also found success with limiting food and hygiene-related diseases by teaching cleanliness habits in all schools and making sure that these schools are properly sterile (Wasonga et al 2014, 45). Given that 40 percent of the population is of primary and secondary school age, reducing the spread of disease / illnesses in schools poses huge benefits. Kenya is a prime example of how to effectively distribute government expenditure to benefit the whole population and lift people out of poverty. Kenya's effective health and education spending strategies are a model for other Sub-Saharan African countries.

Agriculture: In Kenya, Agriculture accounts for 30 percent of GDP, 65 percent of exports, and 80 percent of employment (Boulanger et al. 2016, 2). Most of Kenya is covered in

arid or semi-arid land, which means that farmers can expect low yields and are particularly vulnerable to climate change. The climate in Kenya appears to be becoming hotter and dryer which could have devastating effects for the country's poor. The government has implemented a series of policies in order to increase agricultural technology and make the agricultural industry more resilient to climate change. Many farmers in Kenya use seeds that are not resilient to modern diseases and have low yields. Kenya is subsidizing fertilizer and seeds for smallholder farmers in an effort to phase out obsolete agricultural inputs (Boulanger et al. 2016 , 5). The Kenyan government has funded the creation of a larger fertilizer production company that can provide low-cost fertilizers to farmers without the added import costs from international distributors (Boulanger et al. 2016, 5). Fertilizer use in Kenya has increased by 73 percent between 2010 and 2013, which leads to higher yields and greater food security. The CPI of agricultural products has substantially decreased over the past five years, meaning that agricultural inputs and equipment are more affordable for farmers. This helps Kenya's poorest farmers afford the necessary equipment to obtain higher yields and food security. The success of this policy is likely a result of the substantial amount of research conducted by both the Kenyan government and outside sources into what agricultural inputs would most effectively help Kenya's smaller-holder farmers. Other Sub-Saharan African countries can learn from Kenya's intensive research process and apply similar policies in order to increase food security, increase yields, and lift people out of poverty.

Uganda:

Education: Although Uganda and Kenya have a similar number of children enrolled in primary school, Uganda spends over 70 percent less on primary education per person (World Bank C 2018). The cost of putting a primary school student through school for a year is only \$40 in Uganda. There could be two explanations for this. The first is that the level of education is not very good and the system could benefit from having added resources. The second explanation is that Uganda invested heavily in education over ten years ago and now pays a low cost for maintaining the schools. Kenya and Uganda both have a high number of students reaching tertiary education, so one would expect that their primary and secondary schools are at a similar level.

Uganda spends 77 percent of its total education expenditure on teachers' wages and the remaining 23 percent on building new schools, training teachers, and providing textbooks to the schools (Uganda Ministry of Finance, Planning, and Economic Development 2018, 80). In the late 1990s, Uganda implemented free education for all primary and secondary students (Salve International 2019). Since then, enrollment in primary education has skyrocketed, from 2.7 million children enrolled in 1995 to 8.7 million children in 2015 (United Nations Development Programme X 2018, 2). Over 80 percent of teachers in Uganda are qualified, but the quality of education has proven to be mediocre compared to a country like Kenya (Global Partnership for Education). Whereas only 9.6 percent of Kenyans are "not learning," 29.6 percent of Ugandan children are "not learning" (Brookings Institute 2018). Uganda puts by far the most of its money into primary education, but still struggles like all Sub-Saharan African countries to keep class sizes small. Uganda has effectively been able to train teachers but is struggling to keep up with

the explosion in primary school growth. The country is headed in the right direction by investing more and more into primary education and teacher training.

Government spending on education tripled between 1991 and 1995 with little noticeable progress (Reinikka, Mackinnon 1999, 19). After a thorough review of school records, it was found that less than 20 percent of expenditure directed at primary schools was reaching its intended target and 20 percent of all paid teachers were not currently employed at the school (Reinikka, MacKinnon 1999, 19). The government identified that it needed to increase accountability and decided to announce expenditure allocations in local newspapers and radio shows. In a survey conducted in 1999, it was found that approximately 90 percent of funds were reaching their intended targets and the quality of primary education had improved (Reinikka, Mackinnon 1999, 19). This example highlights the importance of conducting sufficient research before creating a policy structure. Uganda was able to increase the amount of money reaching primary schools by 70 percent without spending a dime. Poorer countries like Sierra Leone and Niger that are plagued by corruption can look at an example similar to this one and apply it to their own situation.

Health: Uganda has been able to effectively reduce its most fatal diseases, a possible outcome of investing more in health. Uganda invests 205 percent more in the development of new health facilities than it did ten years ago (World Bank B 2018). Fatality rates of HIV/AIDS have been reduced by 52.4 percent, neonatal disorders by 12.2 percent, lower respiratory infect by 19.8 percent and diarrheal diseases by 16.3 percent. Although the government is spending more than double on health as compared to ten years ago, out of pocket expenses have also

doubled. This makes healthcare less affordable for its poorest citizens. More funding is likely needed to minimize healthcare costs and make treatment more affordable.

Uganda has also successfully been able to reform regressive tax bills that disproportionately hurt the poor. A local tax called the graduated personal tax (GPT) taxed middle-income and poor citizens the same amount (Reinikka, Mackinnon 1999, 13). Taxes imposed on the poor are a larger financial constraint than taxes on wealthier citizens, so a flat tax of this sort is unfair and drive poorer people further into poverty. Like in the education example, Uganda conducted a detailed research process on the effects of the tax bill and eliminated the tax entirely in 2005 (Walulya 2005, 1).

Agriculture: Effective use of agricultural expenditure in Uganda has been plagued by both a disconnect between local and central government and misallocated funds that favor the Bantu-speaking regions of the country. The National Agricultural Services reform (NAADS) was first passed in 2001 and set out to increase demand for agricultural products through the use of farmer groups (Kjaer 2014, 235). Local officials were not included in NAADS meetings and were not involved in the creation of the policy. The success of the program in the first five years is often disputed and unclear. However, it is clear that president Yoweri Museveni redirected NAADS funds during the 2008 election year to “people whose support he needed, such as cultural leaders of members of parliament” (Kjaer 2014, 236). Bantu-speaking areas in the central and southern regions of Uganda received far more agricultural extension services than the poorer, culturally diverse northern region (Afranaa Kwapong, Nkonya 2015, 126). It is possible that this is partly because the northern region is more challenging to access, but this is likely also a factor of ethnic favoritism.

Recently, Uganda has shifted its agricultural approach to an inputs-based focus through the Operation Wealth Creation policy (OWC). Under OWC, the Ugandan Army gives farmers seeds that are better resistant to disease and the effects of climate change (Mockshell, Birner 2014, 2). Poor farmers are expected to be hit the hardest by climate change and Uganda has identified that agricultural technology must be reformed throughout the country in order to push back against these effects. A program that efficiently distributes modernized seeds and could increase yield would have substantial positive effects for alleviating poverty in Uganda. Donors have criticized the effectiveness of this program, but more research should be done to determine the success of OWC and its impact on smallholder farmers.

Chad:

Education: Chad's education expenditure looks extremely similar to that of Sierra Leone. In recent years, Chad has spent a significant portion of its education budget on tertiary education, amounting to approximately US\$1,300 per student per year (World Bank C 2018). It's spending on primary school students is far lower, at around US\$50 per student per year. Spending on secondary students sits around US\$125 per student per year. As stated before, in extreme cases like these, where the average amount of money spent on tertiary students is over ten times that of any other education level, it is clear that class favoritism exists. The elites in Chad are disproportionately benefiting from education expenditures.

Expected years of schooling in Chad was only 2.3 years in 2017, indicative of a completely broken education system (United Nations Development Programme D 2018, 2). Most children in Chad are not going to school, and it is likely that this figure is even lower among the

poorer citizens. Spending per person towards primary education has been steadily declining over the past five years, so improvements in the enrollment rate are not expected.

Health: Health expenditure per capita in Chad is consistent with others in the region at around \$8.3 per capita (World Bank C 2018). However, it is unlikely that this money is effectively being distributed, given that Chad's life expectancy levels have only marginally improved in the past twenty years. The top three leading causes of death have become more prevalent over the past ten years (Institute for Health Metrics and Evaluation 2017). Furthermore, out-of-pocket spending has increased by 23 percent and government health spending has slightly decreased (Institute for Health Metrics and Evaluation 2017). In a country as impoverished as Chad, this means that healthcare has become far less affordable and the government has not taken the initiative to expand access to healthcare. Further research on this topic will show whether corruption is a key reason for the inefficiencies.

Sudan:

Education: Sudan keeps its government spending documents private, so there is no way of knowing how the education budget is allocated. The available data is made even harder to interpret because the country split into two in 2011. Health data is also unreliable.

Section Summary: Based on the analysis of the four countries performing surprisingly well, clear spending strategies exist that have proven to be effective. In terms of education, it is extremely important to invest in training teachers at the primary school level and having free universal education. Successful teacher training programs like those in Kenya allow more of the population to receive a better education and can potentially lead to alleviating poverty. The

countries that are performing poorly prove that it is important to invest heavily in the primary school level and not to favor the wealthier population by spending a significant portion of the budget on tertiary education. In terms of health, the successful countries target their most fatal diseases through programs tailored towards limiting that disease. Zimbabwe's three percent tax for better services for HIV/AIDS patients is a perfect example of effectively handling a crisis situation. Kenya's clean schools policy is also a successful example of preventative strategies towards making the population healthier. Countries should also be working towards providing better healthcare at a lower out of pocket cost for its citizens. In the poorest countries in Sub-Saharan Africa, most people have little money to spend on healthcare and are the ones who are most in need. Madagascar is a good example of a country who has found a way to double spending on healthcare in recognition of this issue. Agricultural jobs account for a large percentage of the workforce in Sub-Saharan Africa, and programs that give smallholder farmers new technology such as disease-resistant seeds can be extremely effective for lifting people out of poverty. Climate change will make it increasingly more difficult for farmers to prosper in countries like Kenya, and many countries have recognized this risk. It is only through strong investment in agricultural poverty alleviation that countries can limit the devastating effects of climate change for its poorest citizens.

Takeaways:

This section of the thesis will discuss commonalities among policy strategies that have proven to work exceptionally well or poorly. This section is an effort to create a framework that other Sub-Saharan African countries can use and adapt to their own circumstances.

Significant challenges exist with analyzing policy decisions for the four countries that were performing surprisingly poorly. It is difficult to analyze education, health, and agriculture policies when so much money is lost to corruption. The poorest Sub-Saharan African countries must first make structural changes that limit corruption before they can move forward with implementing effective policies. A few methods exist of increasing accountability that have shown to be effective. These include creating a government committee that supervises where funds are being directed, releasing all financial records to the public, and, for school funding, publishing budget allocations in local newspapers. The latter two options pose little financial cost to the government and can have huge impacts, as in the case of Uganda's education system, on the percentage of money reaching its intended source. Leaders must be willing to tackle corruption in the first place to implement any of these strategies, and it may be the case that in some countries, those who are highest up in leadership are the most corrupt.

The poorest Sub-Saharan African countries ideally would invest huge amounts into training teachers, targeting the most deadly diseases, and protecting smallholder farmers against climate change. However, the governments of the poorest Sub-Saharan African countries often lack the finances to make these necessary changes and should instead focus on effectively directing foreign assistance where it is needed most.

The policy decisions of the four countries that are performing surprisingly well can serve as a model for policies in other Sub-Saharan African countries. Uganda demonstrated that it is extremely important to conduct sufficient research on policy implications before a plan goes into effect. This way, country leaders can do their best to anticipate challenges and give their policies the best chance of helping those most in need. Quite a few instances exist of which a

Sub-Saharan African country has implemented free education without properly researching the consequences of that decision or the anticipated strain on the limited existing infrastructure. Often, these decisions are made for political reasons. An effective free education policy would start with a research period that estimates the number of new students that will enter schools in the coming years, and then from that figure, estimate the amount of money required to train new teachers, build new schools, and provide new textbooks. A strategy of this sort should exist for all policies and gives a country the best chance of alleviating poverty without wasted resources. Effective teacher training policies are crucial to creating a thriving education system. As mentioned before with Kenya, training heads of schools who can then pass on their knowledge to teachers is a cost-effective way to create more qualified teachers. While it is important for teachers to attend teaching colleges, it is equally as important to undergo training every few years to ensure that their skills are fresh (Hardman et al. 2011, 680).

Successful health policies can be divided into two categories, policies for times of crisis and general health policies. Zimbabwe's three percent HIV/AIDS business tax is a great example of an effective health policy during a time of crisis. Targeting the tax money into a new fund that is run by its own commission can be a powerful tool for calming the public because it demonstrates that the government is actively responding to the crisis. It is also important to isolate the tax revenue in a separate fund than the general health fund if the health fund is already known to be corrupt. Zimbabwe is a wealthy enough country to afford a tax of this sort and this may not be possible in the poorest countries of the region. A policy of this sort can only be successful if the people are able to afford it, so countries leaders in Chad, Sierra Leone, and Sudan should evaluate the feasibility of its population being able to afford such a tax.

General health funds should be allocated in such a way that they target the country's most deadly diseases, while also not excluding the poor. It is important for Sub-Saharan African countries to ensure that out-of-pocket medical expenses for its poorest citizens are not keeping them in poverty or excluding them from the medical system as a whole. Becoming sick can pose a huge financial burden on a poor household because of both high medical expenses and the lost money from not being able to work. The examples from the previous section of countries that have been able to reduce out-of-pocket health expenses can provide a valuable framework for countries that are looking to improve the lives of the poor. It is also important to ensure that vaccines and other preventative health services are available in rural areas. Country leaders who can not afford to increase their annual health expenditure should direct foreign assistance towards rural communities to provide vaccines, condoms, and sex education. Sufficient access to these resources will give the poor a better chance of lifting themselves out of poverty.

Agriculture is the leading source of employment for people living in Sub-Saharan Africa, especially among the poorest citizens in each country. It is extremely important that governments provide sufficient agricultural services that protect the poor against drought, climate change, and natural disasters. The arid regions of Kenya are becoming drier and experiencing droughts at an alarming rate. Through effective research, the Kenyan government identified that smallholder farmers would be better off using GMO seeds that are resistant to disease and can grow regardless of shocks to the climate. Many farmers were using the same seeds that they used thirty years ago, which are not well equipped to handle the effects of climate change. Kenya allocated a significant portion of its agricultural budget to distributing better seeds to smallholder farmers.

Other countries should implement similar strategies for protecting their poor against climate shocks.

While these seeds may be better, it is important that farmers are actually using them. An effective strategy could be to subsidize one farm per town for a year to use these new seeds risk-free. This will demonstrate to the town that the new seeds are in fact providing a significant advantage, or if the seeds do not work, no one's income will be impacted. Policies of this sort can most directly alleviate poverty because they are helping raise the incomes of the poorest people in a given country. Countries that are able to effectively adapt a similar policy should see improvements in not only smallholder farmer income, but also in health and nutrition as well.

Ethnic favoritism can lead to policies that disproportionately favor the members of a given ethnic group and fail to sufficiently help the poor. This was particularly clear in the case of Uganda, with the president directing more resources towards the Bantu-speaking regions of the country. These problems can be difficult to tackle because ethnic favoritism is often not as blatant as in this case. There also is not an obvious strategy for making policies more equal, other than the leadership simply not favoring a particular group. Elected officials who are dissatisfied with a particular form of favoritism should voice their concerns to the public and encourage the future election of leaders who will not engage in similar behavior.

Another potential solution is to decentralize government expenditure in areas where resources are not being fairly distributed. If subnational authorities are the ones collecting taxes, they can be more responsive to local needs and operate more efficiently. Officials at a provincial level will be able to better identify the needs of local people than the national government. However, decentralization can cause problems with one region making another worse off or with

poorer regions receiving fewer resources than before. Country leaders should be diligent about researching whether this solution can be adapted to their situation.

Although it may sound obvious, the poor can not lift themselves out of poverty if policies require them to pay more than they can afford. This was recognized with out-of-pocket medical expenses and also applies to regressive taxes. The Ugandan government recognized the financial burden on the poor of having a flat tax. It is important for governments to eliminate unnecessary expenses such as these for the poor and instead focus on policies that promote income creation.

HDI Breakdown:

This section of the thesis will look at the HDI components of each of the eight countries in an effort to identify where country leaders should direct most of their resources. Table 2 will be referenced throughout the section and contains 2017 data on life expectancy, expected years of schooling, and GNI per capita for each of the eight countries. Each country's HDI components will be compared to the regional average. Other Sub-Saharan African countries can use this line of analysis to determine which budgeting sectors would benefit the most from an increase in expenditure.

Zimbabwe:

While life expectancy and expected years of schooling are marginally above the regional average, Zimbabwe's GNI per capita is more than 50 percent lower. Zimbabwe should, therefore, focus more budgeting resources towards policies that stimulate the economy. For the past twenty years, Zimbabwean leaders have implemented policies that have been detrimental to

the economy. From 2006-2007 Zimbabwe experienced a period of hyperinflation that was largely caused by the government's excessive printing of money (Munangagwa 2009, 121). Inflation rose to a point in which the Zimbabwean currency became useless (Munangagwa 2009, 110). Zimbabwean leaders also implemented agricultural policies that were detrimental to the Zimbabwean workforce. In 2000, a policy called the "Fast Track" aimed to distribute white people's land proportionally to black people (Munangagwa 2009, 115). Commercial farms that had economies of scale were destroyed and instead replaced with less efficient smaller farms (Munangagwa 2009, 116). Zimbabwe had the fastest shrinking economy in the world and an unemployment rate of 90 percent (Munangagwa 2009, 116).

After a 30 year term as president, Robert Mugabe is no longer in power in Zimbabwe. Known for his rampant corruption and policies that have been economically destructive, his leave from office may allow the country to substantially grow its economy. Agricultural policies that keep efficiency in mind could have immediate results for boosting job growth and stimulating the economy. Common sense macroeconomic fiscal policies will avoid future situations similar to the hyperinflation crisis. This is a pivotal time for Zimbabwe to start on a new path towards economic growth, and it will be up to the new president Emmerson Mnangagwa to make responsible policy decisions. If he fails to create economic growth, the Zimbabwean people must take action to put a more effective leader into power.

Uganda:

Uganda's HDI components follow a similar trend to Zimbabwe's and suggest a need for economic growth. Agriculture accounts for over 70 percent of employment in Uganda (World

Bank B 2018). Effective agricultural policies that stimulate growth, such as the ones mentioned in the previous section, can boost the economy as a whole while also alleviating poverty.

Uganda is investing heavily in roads that span across the country. If done correctly, the project can boost the Ugandan economy by creating a more efficient network for exporting goods. China is loaning Uganda over \$400 billion dollars to build the roads, and Uganda is taxing its people to pay the investment back. Ugandan leaders should be careful that the funding of the roads does not disproportionately affect the poor or sink Uganda into a deep deficit. Many in Uganda feel that this is a wasted investment because it is too costly, and an analysis of the investment's success should be conducted in five to ten years (Namubiru 2018, 1).

Madagascar:

In Madagascar, life expectancy and mean years of schooling both exceed the Sub-Saharan African average. This falls in line with the policy analysis in the previous sections. Madagascar has invested heavily in the health sector in recent years with success. It is also important to note that Madagascar has not had a major violent conflict that would decrease life expectancy. The country's leaders have been able to focus on implementing successful health programs, without the catastrophic setbacks of experiencing a conflict like a civil war. It is not particularly surprising that Madagascar's education parameters exceed the regional average, given the previous analysis.

Like with Uganda and Zimbabwe, Madagascar's GNI per capita falls far short of the regional average. In 2017 GNI per capita in Madagascar was over 60 percent lower than the average in Sub-Saharan Africa. There is no denying that the country is extremely poor and that country leaders should focus their attention on stimulating the economy in ways that also benefit

the poor. While Madagascar's 2018 economic update showed constant positive economic growth, it also indicated that poor farmers are not benefiting from this growth. Future economic policies should focus on programs that help smallholder farmers increase their productivity and focus the increase in taxpayer dollars towards agricultural subsidies. Roads are lacking in many parts of the country, which makes it difficult to ship agricultural products. An investment in roads would open up new opportunities for farmers that were not previously connected to other communities (African Economic Outlook 2019, 160).

As mentioned in previous sections, Madagascar's economic growth is closely correlated with its political instability. Given the controversial elections in 2018, Madagascar is at risk of slipping back into political instability and slowing economic growth.

Kenya:

All three of Kenya's HDI parameters either exceed or come close to the Sub-Saharan African average. As seen throughout the thesis, Kenya has implemented many successful policies that have helped lift the poor out of poverty. Kenya should not make any large structural changes to its spending and instead monitor the progress of its current policies for adaptation when needed.

Kenya has implemented the "Big Four Economic Plan" that aims to alleviate poverty. The plan involves developing the country's manufacturing sector and also aims to provide the poor with the proper resources to be healthy (African Development Bank Group 2019, 156).

Niger:

Niger is perhaps in worse shape than any of the other eight countries. Mean years of schooling is only 5.4 years, and the country has the lowest literacy rate in the world (Borgen 2016, 1). GNI per capita is also lower than any of the other eight countries. In terms of internal government expenditure, Niger should focus on training qualified teachers. With most of the country being illiterate, few qualified teachers per student exist and an effective teacher training program can show huge rates of returns to not only the education system, but also the economy as a whole. Niger needs its education system to catch up to have a chance of growing its economy to the levels of the surprisingly successful Sub-Saharan African countries.

Niger's government expenditure is extremely limited, so it may be more relevant to discuss this section in terms of how foreign assistance resources can be directed. As mentioned before, teacher training will see high rates of returns. Agricultural programs that aid in poverty alleviation will also yield high rates of returns for growing the economy.

Chad:

Chad falls short of the regional averages in all three categories. The country is still feeling the effects of civil war, and extremist groups create chaos around the Chadian borders (African Development Bank Group 2019, 141). Factors such as these make it impossible for the government to effectively distribute resources needed for health facilities, education betterment, or economic growth. Chad is extremely dependant on oil, which can be catastrophic because of how volatile oil prices have been lately (African Development Bank Group 2019, 141). The government should focus on developing other markets, like agriculture, as a way to boost economic growth and alleviate poverty. The growth of this sector can lead to added taxation for the government to later invest in health and education.

Chad's leaders should also develop a strategy for fighting back against extremist groups because they are disruptive to importing and exporting goods (African Development Bank Group 2019, 141). Chad's agricultural sector cannot grow to its greatest potential if exporting goods to neighboring countries is impossible.

Sierra Leone:

Sierra Leone also falls short of the regional averages in all three categories and has recently suffered from a devastating Ebola epidemic. The country is not experiencing significant disruptions at the moment and can use this as a time for growth. Mining is playing a key role in driving economic growth in Sierra Leone (African Development Bank Group 2019, 174). Policy-makers should ensure that mining practices are beneficial for the surrounding communities and are not strictly exploitative. Sierra Leone has invested heavily in roads and infrastructure, which has led to the country having a large deficit. Policy-makers should keep an eye on whether this investment is paying off and determine the macroeconomic implications.

Sudan:

Interestingly, GNI per capita for Sudan exceeds the regional average. This contrasts with much of what is known about the current crisis in the country. In 2009, 46.5 percent of the country was in poverty and the country's population is currently victim to widespread violent crime and devastating agricultural output shortages (Borgen B 2017, 1). The most realistic explanation for why GNI per capita is so high is simply that this figure is incorrect. It is possible

that the government of Sudan has lied about its current economic situation in order to look like they are doing better than they actually are.

In this situation, it is difficult to recommend which sector the government should focus its budget towards. However, given the current economic state of Sudan, government leaders should focus on policies that most directly lead to income generation for the country's poor. Sudan has the climate to grow a wide variety of crops but is not utilizing its land as much as it could. Given that there are large job shortages for young people, Sudan could benefit from implementing an agricultural policy that encourages young people to take advantage of the country's untapped farming potential (African Development Bank Group 2019, 178).

Since the recent split from South Sudan, violent conflict has persisted in Sudan. Instability creates challenges for implementing effective agricultural economic growth policies. Sudan should conduct extensive research on which regions would benefit most from agricultural policies in order to ensure that the money does not go to waste.

2017 HDI Components (Table 2)

Country	Life Expectancy	Expected Years of Schooling	GNI per Capita
Kenya	67.3	12.1	2,961
Zimbabwe	61.7	10.3	1,683
Uganda	60.2	11.6	1,658
Madagascar	66.3	10.6	1,358
Sierra Leone	52.2	9.8	1,240
Chad	53.2	8.0	1,750
Niger	60.4	5.4	906
Sudan	63.7	7.2	2,380*

Sub-Saharan Africa	60.7	10.1	3,399
--------------------	------	------	-------

*Data is from the United Nations Development Program Reports
on Human Development Indices*

Conclusion:

This thesis closely analyzed countries that were performing surprisingly well and surprisingly poorly in an effort to identify which policies could be successfully adapted to other countries in Sub-Saharan Africa. Common themes among policies that were effective in poverty alleviation were identified and then used to create recommendations for all eight countries moving forward. The final section of the thesis analyzed each country’s HDI components in order to identify which areas should be focal points for policy-makers. This is a different line of analysis than is common, as policy decisions are often driven based on projected economic growth. However, it is nearly impossible to accurately estimate future economic growth generated from health or education policies. A formula does not exist for projecting the expected change in GDP from investing more in an area like primary education. The line of analysis used in this thesis presents an effective way in which policy-makers can identify when education or health services need to become the focus for directing government expenditure.

Although there are significant challenges for alleviating poverty, especially for the poorest Sub-Saharan African countries, economic growth is projected to continue for many in the region. During this time of economic growth and stability from violence (for many but not all countries in the region), country leaders can accelerate poverty alleviation by implementing similar policies to those that have proven to be successful. With proper adaptation and

implementation, Sub-Saharan African countries can significantly reduce the total number of people living in poverty in the world.

Future studies can expand on this research by analyzing more policies that have been stood out as successful for poverty alleviation over the past twenty years. This thesis looked at policy decisions for eight countries, which leaves many other countries in the region left to be studied. As more information is released on the poorest Sub-Saharan African countries, it will be important to incorporate that data into a new study of this kind. Future studies can also look at how foreign assistance can best be allocated for the poorest countries in Sub-Saharan Africa.

References:

- Abuya, Benta A., Kassahun Admassu, Moses Ngware, Elijah O. Onsomu, and Moses Oketch. "Free Primary Education and Implementation in Kenya: The Role of Primary School Teachers in Addressing the Policy Gap." *SAGE Open* 5, no. 1 (March 1, 2015): 2158244015571488. <https://doi.org/10.1177/2158244015571488>.
- AfranaaKwapong and Nkonya - Agricultural Extension Reforms and Development in .Pdf." Accessed April 26, 2019. <https://academicjournals.org/journal/JAERD/article-full-text-pdf/FD94D4851880>.
- AfranaaKwapong, Nana, and Ephraim Nkonya. "Agricultural Extension Reforms and Development in Uganda," March 23, 2015, 13. <https://doi.org/10.5897/JAERD2013.0528>.
- African Development Bank Group. "African Economic Outlook 2019." 2019

https://www.afdb.org/fileadmin/uploads/afdb/Documents/Publications/2019AEO/AEO_2019-EN.pdf

Bhat, Nisha, Peter Kilmarx, Freeman Dube, Albert Manenji, Medelina Dube, and Tapuwa Magure. “Zimbabwe’s National AIDS Levy: A Case Study.” *SAHARA-J: Journal of Social Aspects of HIV/AIDS* 13 (December 1, 2016): 1–7.

<https://doi.org/10.1080/17290376.2015.1123646>.

Borgen, Clint. “8 Things You Should Know About Education in Niger.” The Borgen Project, July 29, 2016. <https://borgenproject.org/8-things-education-in-niger/>.

———. “Why Is Sudan Poor?” The Borgen Project, July 15, 2017.

<https://borgenproject.org/why-is-sudan-poor/>.

Boulanger, Pierre, Hasan Dudu, Emanuele Ferrari, Alfredo Mainar, and Ilaria Proietti. “Are Input Policies Effective to Enhance Food Security in Kenya? A CGE Analysis.” 2016 Fifth International Conference, September 23–26, 2016, Addis Ababa, Ethiopia. African Association of Agricultural Economists (AAAE), September 2016.

<https://ideas.repec.org/p/ags/aaae16/246954.html>.

Brookings Institute. “Africa Learning Barometer.” 2017.

<https://www.brookings.edu/interactives/africa-learning-barometer/>

“Building Resilient Communities 2016 UNDP Kenya i.Pdf.” Accessed April 26, 2019.

https://www.undp.org/content/dam/kenya/docs/Annual%20Reports/UNDP%20Kenya%202016%20Annual%20Report_clickable%20version.pdf.

Global Partnership for Education. “GPE Results Forms.” 2018.

<https://www.globalpartnership.org/sites/default/files/2018-06-gpe-results-report-2018-web4.pdf>

Hardman, Frank, Jim Ackers, Niki Abrishamian, and Margo O’Sullivan. “Developing a Systemic Approach to Teacher Education in Sub-Saharan Africa: Emerging Lessons from Kenya, Tanzania and Uganda.” *Compare: A Journal of Comparative and International Education* 41, no. 5 (September 1, 2011): 669–83.

<https://doi.org/10.1080/03057925.2011.581014>.

Institute for Health Metric and Evaluation. “Global Burden of Disease Study 2017 (GBD 2017) Data Resources | GHDx,” 2017. <http://ghdx.healthdata.org/gbd-2017>.

KjÆr, Anne Mette. “Political Settlements and Productive Sector Policies: Understanding Sector Differences in Uganda.” *World Development* 68 (April 1, 2015): 230–41.

<https://doi.org/10.1016/j.worlddev.2014.12.004>.

- Mackatiani, Caleb, Mercy Imbovah, Navin Imbova, and D. K. Gakungai. "Development of Education in Kenya: Influence of the Political Factor beyond 2015 Mdgs." *Journal of Education and Practice* 7, no. 11 (2016): 55–60.
- Merab, Elizabeth. "State Launches HIV Drug and Testing Kits - Daily Nation," May 15, 2017.
<https://www.nation.co.ke/news/Govt-launches-two-approaches-to-fight-HIV-Aids/1056-3914614-8p6ubc/index.html>.
- Mockshell, Jonathan, and Regina Birner. "Donors and Domestic Policy Makers: Two Worlds in Agricultural Policy-Making?" *Food Policy* 55 (August 1, 2015): 1–14.
<https://doi.org/10.1016/j.foodpol.2015.05.004>.
- Munangagwa, Chidochashe L. "The Economic Decline of Zimbabwe." *Gettysburg Economic Review* 3, no. 9 (2009): 22.
<https://cupola.gettysburg.edu/cgi/viewcontent.cgi?article=1021&context=ger>.
- Mutumba, Gerald Walulya & Richard. "Uganda: Graduated Tax to End By July 1 - Museveni." *The Monitor (Kampala)*, June 8, 2005.
<https://allafrica.com/stories/200506080359.html>.
- Namubiru, Lydia. "Chinese Contractors Are Going to Keep Dominating Road Construction in Uganda." *Quartz Africa*, July 13, 2018.
<https://qz.com/africa/1326618/china-is-building-expensive-roads-in-uganda/>.
- Reinikka, Ritva Mackinnon, John. *Lessons from Uganda on Strategies to Fight Poverty*. Policy Research Working Papers. The World Bank, 1999.
<https://doi.org/10.1596/1813-9450-2440>.
- Salve International. "Education in Uganda – SALVE International." Accessed April 26, 2019. <https://www.salveinternational.org/salve-explained/education-in-uganda/>.
- Thomas, Abdul Rashid. "Sierra Leone's Higher Education Sector in Crisis: Njala Fights to Survive," July 21, 2013. <https://www.thesierraleonetelegraph.com/4436/>.
- Tichakunda, Chisango Future Fortune. "Challenges and Prospects of Zimbabwe's Command Farming in Unlocking the Country's Smallholder Agricultural Economy." *International Journal of Agricultural Economics* 3, no. 4 (July 31, 2018): 76.
<https://doi.org/10.11648/j.ijae.20180304.13>.
- UNAIDS. "Zimbabwe's Accelerated Response to HIV." Accessed April 26, 2019.
http://www.unaids.org/en/resources/presscentre/featurestories/2015/june/20150608_PC_B_Zimbabwe.

“UNICEF_Madagascar_--_2017_--_Political_Economy_Analysis(1).Pdf.” Accessed April 26, 2019.

[https://www.unicef.org/esaro/UNICEF_Madagascar_--_2017_--_Political_Economy_Analysis\(1\).pdf](https://www.unicef.org/esaro/UNICEF_Madagascar_--_2017_--_Political_Economy_Analysis(1).pdf).

United Nations Development Programme. “Building Resilient Communities | 2016 UNDP Kenya in Focus,” 2016, 68.

United Nations Development Programme. “Human Development Indices and Indicators: 2018 Statistical Update Angola,” 2018.

http://hdr.undp.org/sites/all/themes/hdr_theme/country-notes/AGO.pdf

United Nations Development Programme. “Human Development Indices and Indicators: 2018 Statistical Update Cameroon,” 2018.

http://hdr.undp.org/sites/all/themes/hdr_theme/country-notes/CMR.pdf

United Nations Development Programme. “Human Development Indices and Indicators: 2018 Statistical Update Central African Republic,” 2018.

http://hdr.undp.org/sites/all/themes/hdr_theme/country-notes/CAF.pdf

United Nations Development Programme. “Human Development Indices and Indicators: 2018 Statistical Update Chad,” 2018.

<http://hdr.undp.org/en/content/human-development-indices-indicators-2018-statistical-update>

United Nations Development Programme. “Human Development Indices and Indicators: 2018 Statistical Update Djibouti,” 2018.

http://hdr.undp.org/sites/all/themes/hdr_theme/country-notes/DJI.pdf

United Nations Development Programme. “Human Development Indices and Indicators: 2018 Statistical Update Ethiopia,” 2018.

http://hdr.undp.org/sites/all/themes/hdr_theme/country-notes/ETH.pdf

United Nations Development Programme. “Human Development Indices and Indicators: 2018 Statistical Update Ghana,” 2018.

http://hdr.undp.org/sites/all/themes/hdr_theme/country-notes/GHA.pdf

United Nations Development Programme. “Human Development Indices and Indicators: 2018 Statistical Update Guinea,” 2018.

http://hdr.undp.org/sites/all/themes/hdr_theme/country-notes/GIN.pdf

United Nations Development Programme. “Human Development Indices and Indicators: 2018 Statistical Update Kenya,” 2018.

http://hdr.undp.org/sites/all/themes/hdr_theme/country-notes/KEN.pdf

United Nations Development Programme. “Human Development Indices and Indicators: 2018 Statistical Update Liberia,” 2018.

http://hdr.undp.org/sites/all/themes/hdr_theme/country-notes/LBR.pdf

United Nations Development Programme. “Human Development Indices and Indicators: 2018 Statistical Update Madagascar,” 2018.

http://hdr.undp.org/sites/all/themes/hdr_theme/country-notes/MDG.pdf

United Nations Development Programme. “Human Development Indices and Indicators: 2018 Statistical Update Malawi,” 2018.

http://hdr.undp.org/sites/all/themes/hdr_theme/country-notes/MWI.pdf

United Nations Development Programme. “Human Development Indices and Indicators: 2018 Statistical Update Mali,” 2018.

http://hdr.undp.org/sites/all/themes/hdr_theme/country-notes/MLI.pdf

United Nations Development Programme. “Human Development Indices and Indicators: 2018 Statistical Update Mauritania,” 2018.

http://hdr.undp.org/sites/all/themes/hdr_theme/country-notes/MRT.pdf

United Nations Development Programme. “Human Development Indices and Indicators: 2018 Statistical Update Mozambique,” 2018.

http://hdr.undp.org/sites/all/themes/hdr_theme/country-notes/MOZ.pdf

United Nations Development Programme. “Human Development Indices and Indicators: 2018 Statistical Update Namibia,” 2018.

http://hdr.undp.org/sites/all/themes/hdr_theme/country-notes/NAM.pdf

United Nations Development Programme. “Human Development Indices and Indicators: 2018 Statistical Update Niger,” 2018.

http://hdr.undp.org/sites/all/themes/hdr_theme/country-notes/NER.pdf

United Nations Development Programme. “Human Development Indices and Indicators: 2018 Statistical Update Nigeria,” 2018.

http://hdr.undp.org/sites/all/themes/hdr_theme/country-notes/NGA.pdf

United Nations Development Programme. “Human Development Indices and Indicators: 2018 Statistical Update Rwanda,” 2018.

http://hdr.undp.org/sites/all/themes/hdr_theme/country-notes/RWA.pdf

United Nations Development Programme. “Human Development Indices and Indicators: 2018 Statistical Update Senegal,” 2018.

- http://hdr.undp.org/sites/all/themes/hdr_theme/country-notes/SEN.pdf
- United Nations Development Programme. “Human Development Indices and Indicators: 2018 Statistical Update Sierra Leone,” 2018.
- http://hdr.undp.org/sites/all/themes/hdr_theme/country-notes/SLE.pdf
- United Nations Development Programme. “Human Development Indices and Indicators: 2018 Statistical Update Sudan,” 2018.
- http://hdr.undp.org/sites/all/themes/hdr_theme/country-notes/SDN.pdf
- United Nations Development Programme. “Human Development Indices and Indicators: 2018 Statistical Update Tanzania,” 2018.
- http://hdr.undp.org/sites/all/themes/hdr_theme/country-notes/TZA.pdf
- United Nations Development Programme. “Human Development Indices and Indicators: 2018 Statistical Update Uganda,” 2018.
- http://hdr.undp.org/sites/all/themes/hdr_theme/country-notes/UGA.pdf
- United Nations Development Programme. “Human Development Indices and Indicators: 2018 Statistical Update Zambia,” 2018.
- http://hdr.undp.org/sites/all/themes/hdr_theme/country-notes/ZMB.pdf
- United Nations Development Programme. “Human Development Indices and Indicators: 2018 Statistical Update Zimbabwe,” 2018.
- http://hdr.undp.org/sites/all/themes/hdr_theme/country-notes/ZWE.pdf
- Wasonga, Job, Betty Ojeny, Gordon Oluoch, and Ben Okech. “Kenya Comprehensive School Health Policy: Lessons from a Pilot Program.” *Journal of Public Health in Africa* 5, no. 1 (June 19, 2014). <https://doi.org/10.4081/jphia.2014.313>.
- Williams, Paul. *War & Conflict in Africa*. Cambridge: Polity, 2017.
- World Bank. “Data | The World Bank.” Accessed April 26, 2019.
- <http://datatopics.worldbank.org/sdgatlas/archive/2017/SDG-01-no-poverty.html>.
- World Bank. “Open Budgets Portal.” 2018.
- <http://boost.worldbank.org/>
- World Bank. “World Development Indicators.” 2018.
- <https://databank.worldbank.org/data/reports.aspx?source=2&country=AGO>
- World Bank. “Poverty and Shared Prosperity 2018 : Piecing Together the Poverty Puzzle.” The World Bank, October 17, 2018.
- <http://documents.worldbank.org/curated/en/104451542202552048/Poverty-and-Shared-Prosperity-2018-Piecing-Together-the-Poverty-Puzzle>.

Uganda Ministry of Finance, Planning, and Economic Development. “National Budget Framework Paper.” 2018

<https://csbag.org/wp-content/uploads/2018/01/National-Budget-Framework-Paper-FY-2018-19-FY-2022-23-13.pdf>

Zimbabwe Ministry of Finance. “The 2017 National Budget Statement.” 2017.

<https://www.tradezimbabwe.com/wp-content/uploads/2016/12/National-Budget-Statement-2017.pdf>