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An Analysis of Education Reform in Sub-Saharan Africa

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AN ANALYSIS OF EDUCATION REFORM IN SUB-SAHARAN AFRICA

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Abstract

Sub-Saharan Africa continues to fall behind other developing regions regarding educational attainment, despite recent progress in enrollment. This thesis examines a variety of external conditional factors that could contribute to a country's relative success, in terms of years spent in school using a prediction model that compares years enrolled in secondary education as a foundation to determine over- and under-performing countries in sub-Saharan Africa.

By exploring various educational policies, historical patterns, and projects executed in Rwanda, South Africa, Ghana, and Botswana, this thesis sheds light on four main challenges that can impact educational attainment: ethnic and racial tensions, an acute shortage of learning materials and trained teachers, inappropriate curricula, and high costs of education. Some of these challenges have been met with an array of policies, with mixed results in terms of the soundness and fairness of policies as well as the effectiveness of implementation.

This thesis argues that to facilitate the creation of an effective school system, education policies must focus on more appropriate reallocations of funding, improved teacher-training quality throughout rural regions, applicable and localized curricula, conditional cash transfer programs, and long-term improvements in the job market.

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Chapter 1: Introduction: The Importance of Education

"Education is the most powerful weapon
which you can use to change the world"

Nelson Mandela

As both a fundamental human right and an engine for growth, education is a key tool for enhancing sustainable development throughout sub-Saharan Africa. Despite unprecedented economic advancement, the region lags in educational success. Various educational initiatives have struck the continent without resounding results: there has been a ten percent increase in out-of-school children over the past 15 years and one in four people in developing countries is completely illiterate (UNESCO 2015; Provost 2014). Thus, policymakers are challenged with the task of identifying and implementing alternative approaches to improve not only access to, but the quality of education for all citizens.

To identify effective policies for improved education systems, this thesis controls for a variety of external conditioning factors that likely contribute to secondary education achievement. This regression provides a platform to then analyze various educational policies, historical tactics, and projects executed previously in developing countries and encourage the adoption of effective education reform, otherwise known as the policy transfer approach.[1] More specifically, this thesis will examine the educational

[1] The "policy transfer" approach involves applying policy solutions in one political setting to administrations elsewhere. As recognized by Wolman (1992, 43-44), policy transfer is not "an isolated endeavor," but rather an "integral part of the policy process." In a later report (2006), Wolman specifies three critical questions to analyze when considering the transfer policy approach: 1) Are the issues in the

frameworks in Rwanda, South Africa, Ghana, and Botswana that contribute to the country's relative success or failures in terms of educational attainment.

The following section will outline some challenges barring students from educational achievement and the benefits of education for those students, to explain why expanding access to quality education has become a major policy goal in the last half century. The second chapter presents a regression model developed to determine which countries' populations are over- or under-performing in regards to the number of years of education attained. Selecting countries from the regression model in Chapter 2, Chapter 3 presents Rwanda, South Africa, Ghana, and Botswana as case studies to analyze opportunities and policies in sub-Saharan Africa's education reform. Given the analysis of these individual cases, Chapter 4 offers insights for reform in the future to ensure that education can serve as basic insurance against poverty.

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recipient country similar to the originating country? 2) In what scope was the impact of these policies on the challenges in the originating country and what was the "value-added" of the program? 3) How does the recipient country differ from the originating country? Will policies still be susceptible? (Wolman 2006, 17). Widespread policy transfer approaches have been adopted in situations such as privatizing state-owned enterprises (Kikeri et al. 1994), addressing money laundering in 170 countries (Sharman 2008), and in establishing central banks as legally independent (Marcussen 2005, 903). While this approach can be helpful in development, it can also prove dangerous when policies are applied without appropriate knowledge of the specific country context.

Challenges for Schools and Students

Sub-Saharan Africa continues to face complex barriers that impede improvement of a stronger educational infrastructure, ranging from inadequate learning material and infrastructural decay to overcrowded classrooms. At the school level, ensuring adequate access, quality and relevance may be costly and inefficient. On the bureaucratic level, governance and financing have been slow and, in many cases, corrupt. Therefore, despite policies directed to benefit the poor and investments in resources, access to education remains strongly associated with household wealth; children from the poorest households in sub-Saharan Africa are approximately three times more likely to be out of school than their economically advantaged counterparts (Deininger, 2003). This is due to an unusually perfect storm of factors: an inability to meet the cost of education, high opportunity cost of losing child labor in subsistence-oriented rural communities, and the distance travelled to school.

Targeted discrimination further exacerbates both the causes and consequences of the disparities in sub-Saharan Africa. Marginalized groups such as disabled students are denied education because of a lack of access, specialist facilities, and cultural stigmas. Young women face cultural norms such as early marriage, teenage pregnancy, gender-based violence, and discriminatory education laws and practices that prevent millions of them from the opportunity to benefit from education (Ombati and Mokua 2012).

Additionally, environmental shocks, such as droughts and other natural disasters, can significantly damage education attainment. Since girls in sub-Saharan Africa typically spend approximately 15 hours of their week obtaining water for their families

(*Human Development Report* 2006, 22), spending time in a classroom may appear an unnecessary privilege.[2]

Challenges that stymy sub-Saharan Africa's educational development cannot be divorced from the impeding ramifications of ethnicity. If a government is hijacked by one or more ethnic groups, state machinery can be manipulated to ensure "upward social mobility…whereby clientelism and nepotism are used as yardsticks in the acquisition of state contracts and tenders" (Noyoo 2000, 59). In regards to education, ethnic differences can lead to discriminatory practices or curricula that can impede learning for certain groups. For instance, Rwandan education has continued to benefit the ruling party, currently the Tutsis, and has been inimical for the rural majority, the Hutu.

These cultural tensions can manifest into conflict, another factor that proves detrimental to education systems. In 2008, it was estimated that over half of the world's out-of-school children live in conflict-affected states (Nicolai 2008, 27). On average, in conflict-riddled areas, 79 percent of young people are literate, compared with the 93 percent of young people in non-affected poor countries around the world (UNESCO 2011, 132). This disparity is a result of the fact that in-country conflict can physically damage school buildings and often increases the orphaned population—affecting the entire apparatus of an educational structure and hindering the cultural views towards school (Abdi 1998). Families in Nigeria, for example, were strongly discouraged from

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[2] Maslow's Hierarchy of Needs is a five stage model that explains motivational needs. One must first satisfy lower level "basic" needs before progressing to "self-actualization" (Maslow 1943, 370). The order of needs follows, in order of deficiency needs to growth needs: 1. Biological and Physiological needs such as food, water, shelter; 2. Safety needs, such as protection from elements, law, stability; 3. Social needs such as family and romantic relationships; 4. Esteem needs, such as

sending their children to school for months after Boko Haram kidnapped 234 girls taking Physics exams in April of 2014 (*Times Live* 2014). In Mali, the Democratic Republic of Congo, and Somalia, violent insurgents destroyed schools and left the education system bereft of teaching professionals and adequate infrastructure (Poirier 2012).

Benefits of Education

In sub-Saharan Africa, abject poverty, corrupt governance, and wanton violence are often endemic, distracting governments from seriously devoting effort to comprehensive education reform. However, these multi-faceted countrywide challenges can be mitigated through education, and the severe challenges posed in improving the education sector are often outweighed by its benefits.

Economically, education is generally understood to be a vital catalyst for fostering sustainable economic development on both the individual and societal level of a country (Grantham-McGregor et al. 2007; Hanushek and Woessmann 2007). Indeed, the "rate of return to investment on education," which compares the cost of attending school to the benefits of having more education for individuals, is found to yield the highest results for the poorest populations (Psacharopoulous and Patrinos 2004, 15). One study by the International Food Policy Research Institute found that when women farmers in Kenya are given the same level of education as their male counterparts, farms yield up to 22 percent more crops (Davis et al. 2012). A 2011 UNESCO report found that one extra year of schooling relates to an estimated ten percent increase in an individual's earnings.

However, some argue that the relationship between education and private income may not necessarily be as strong as simple correlations imply.[3]

Education can also improve the overall welfare of a country. Theodore Schultz's "Human Capital Theory" analyzes human-focused investment as a means to enhance welfare, since gap in earnings reflect differences in a country's health and education system (Schultz 1961, 4). According to this theory, expenditure on education is an investment similar to any other, with a broad range of returns that make the investment profitable. The concept of education improving overall national output through productivity and intellectual flexibility in the workforce is seen on a global level, especially in cases like the East Asian Miracle, and can be found in sub-Saharan Africa as well (Romer 1990).[4]

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[3] Determining a causal relationship between education and development is difficult given the unreliable evidence of micro and macroeconomic data. The micro-level impact of education is challenging to measure, given that an increase in earnings does not necessarily reflect an individual's gains in productivity, but instead may be reflecting more of an innate characteristic of determination that could justify the higher income (Psacharopoulos 1994, 1328). Temple (2001, 24) asserts that externalities of education can imply an increase in productivity that is not shown in the individual's private wages. Furthermore, others argue that the impact of education on wage depends on the general supply of skilled labor and the demand of human capital, and often assuming that the returns on human capital are constant may in fact be incorrect (Schultz 1961, 73).

[4] A common example of impressive economic growth paralleling education reform is found in East Asia. Sixty years ago, South Korea was impoverished; today, it is the 11th largest global economy and boasts one of the best education systems in the world (Chakrabarti 2013). Singapore, a small city-state with few resources in 1960, now trails closely behind Hong Kong and Japan in educational attainment as well as overall economic productivity. A 1993 World Bank report studied eight East Asian economies accrediting their success to "getting the basics right," including establishing a sound development policy, encouraging productive agricultural policies, and focusing on primary and secondary schools in education policies (Birdsall et al. 1993, 5). High rates of investments between 1960 and 1990 have been associated with an increase in human capital due to universal primary and

For example, one report predicted 171 million people, or 12 percent of the world poverty population, could be lifted out of poverty if all students in low-income countries left school with basic reading skills (UNESCO 2011). In sub-Saharan Africa, as reported by the World Bank, each overall additional year of schooling raises annual gross domestic product (GDP) by 0.37 percent, while an increase of one standard deviation in student scores on international assessments of literacy and numeracy is associated with a two percent increase in annual GDP (*Education Counts Towards the Millennium Development Goals* 2011, 32).

Substantial evidence further reinforces the idea that broadly based human capital investment is an integral component of rapid and sustainable growth, which also acts as a tool to guarantee an overall healthier life. Education is directly associated with lower levels of child mortality: in sub-Saharan Africa, each year of a mother's schooling reduces the probability of infant mortality by five to ten percent (UNESCO 2011). Moreover, the 2011 UNESCO report predicted that an estimated 1.8 million children's lives in sub-Saharan Africa could have been saved in 2008 if their mothers had at least secondary education.

Additionally, education proves to be deeply intertwined with the pervasive role of HIV/AIDS in sub-Saharan Africa: the disease has proven to further hinder the teacher shortage in sub-Saharan Africa while improved education can reduce the rate at which it

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secondary education (Birdsall et al.1993, 8, 15). Children in Hong Kong, Korea, and Singapore received universal primary education by 1965 and secondary by 1987, successfully expediting the elimination of gender gaps in education (Birdsall et al.1993, 43). The report, in stressing the importance of human capital, credits investment in people, education, and health to East Asia's success economically and in social stability, as paired with economic policy changes in these different markets (Birdsall et al.1993, 19).

spreads. In South Africa, approximately one out of five teachers aged 25 to 34 is living with the HIV/AIDS; in Tanzania, over 45,000 teachers have already been lost to the epidemic (Pennap et al. 2011). In contrast, education can drastically reduce the incidence of these diseases; one example of this was in Ethiopia, where community based health workers diagnosed and treated patients free of charge and halved malaria deaths over three years (World Health Organization 2010). Educating girls and women, in particular, is shown to be an incredibly effective investment in developing countries, leading to better family health, improved birth spacing, lower infant and child mortality, and enhanced educational attainment of their children (Ozturk 2001, 2). Alongside HIV/AIDS, education combats malaria and similar life-threatening diseases by dispelling stigmas and discrimination through awareness, as well as by improving access to treatment.

As these case studies make clear, there are tremendous benefits of education, yet the challenges to realizing them must be acknowledged and overcome. The following section develops a regression model to understand the significance that different factors can play in realizing educational attainment. This thesis then uses that prediction model as a basis for analyzing four country case studies.

Chapter 2: Developing a Foundation for Comparison

Plans to prioritize education, most notably through the United Nations' Millennium Development Goals, have galvanized unprecedented efforts to provide universal primary education by 2015.[5] While the Education Goal has not been fully achieved, the developing world has witnessed an impressive surge in global gross primary school enrollment rates, while an acknowledgment of the need for basic education has become universally paramount. Indeed, as exhibited in Table 1, sub-Saharan Africa observed the largest increases in the primary adjusted net enrollment ratio, from 59 percent in 1999 to 79 percent in 2012 (UNESCO Institute of Statistics Database).

Secondary education, however, has not followed the same trajectory, and while the global convergence around primary education enrollment is certainly impressive, secondary education has been relatively neglected, and sub-Saharan Africa still lags far behind the rest of the world, as seen in Table 2. Interestingly, sub-Saharan Africa's gross enrollment by 2012 (20 percent) has kept pace with Low Income Countries (19 percent enrollment in 2012), while other low-income regions have seen a larger surge in growth over these past thirteen years, validating that sub-Saharan Africa suffers from the slowest growth in the world and? regionally in terms of enrollment rates. Meanwhile, high-

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[5] The eight Millennium Development Goals were established in 2000, following the Millennium Summit of the United Nations, to prioritize sustainable development globally. Around the world, 189 member states committed to: 1) eradicate extreme poverty 2) achieve universal primary education 3) promote gender equality 4) reduce child mortality 5) improve maternal health 6) combat HIV/AIDS and other diseases 7) ensure environmental sustainability and 8) develop global partnerships for development by 2015 (Sustainable Development Goals).

income countries had a greater percentage increase from a higher starting base (72 to 86 percent) (Bruneforth et al. 2011). Similarly, only 56 percent of children finish primary school education and, according to UNESCO, 69 million secondary school-age children do not attend secondary school (Bruneforth et al. 2011).[6]

The increase in primary enrollment rates is laudable, and a rising number of children are able to enroll in secondary education, but overall retention is remarkably low. At its current trajectory, lower-secondary completion in sub-Saharan Africa is not expected to reach 100 percent for another hundred years (Winthrop 2015); of the 128 million students graduating from primary school, only half will acquire basic literacy and math skills to live productive lives (Van Fleet 2012). This reality potentially reflects poor quality at the primary level that halts students from succeeding past the compulsory primary education. Secondary school student retention rate is one indicator of the quality of primary education provided. Secondary education is a pivotal developmental stage that encourages for fostering transferrable skills to create an active, educated citizenship, and is an essential for crossing the bridge into university. Secondary school and university education, in turn, is crucial for training primary school teachers.

[6] UNESCO defines secondary school-age children as ranging from ten to 16 years of age (2015).

Table 1: Trends in Enrollment in Sub-Saharan Africa by Education Level 1970 to 2008

	1970	1975	1980	1985	1990	1995	2000	2005	2008
Number of Students by Level (in thousands)									
Pre-Primary	…	…	…	…	4,258	4,926	6,626	9,012	10,902
Primary	23,473	31,048	4,6337	55,498	59,562	70,451	86,757	112,156	128,548
Secondary	4,260	5,734	8,883	13,588	14,888	18,400	22,015	30,986	36,349
Tertiary	202	307	557	894	1,288	1,830	2,484	3,813	41,517
Gross Enrollment Rate									
Pre-Primary	…	…	…	…	10.5	10.6	12.1	14.8	16.7
Primary	52.5	60.6	77.6	79.3	72.8	75.8	82.2	95.4	101.6
Secondary	11.3	13.2	17.8	23.3	22.5	23.9	25	31	34.1
Tertiary	0.8	1.1	1.7	2.4	3	3.6	4.2	5.5	6.1

Source: UNESCO Institute of Statistics Database

Table 2: Secondary Enrollment Rates in 1999 and 2012

	Total Enrollment change since 1999 - 2012 (%)	Gross Enrollment Ratio 1999 (%)	Gross Enrollment Ratio 2012 (%)	Gender Parity Index of GER 1999 (F/M)	Gender Parity Index of GER 2012 (F/M)
World	64	33	54	0.97	1
Low Income Countries	107	11	19	0.99	0.97
High Income Countries	22	72	86	0.98	0.99
Sub-Saharan Africa	149	11	20	0.96	1
East Asia / Pacific	45	38	68	0.98	0.9
South and West Asia	148	22	55	0.94	1.02
Latin America and Caribbean	34	54	74	1.01	1
North America and Western Europe	20	76	89	0.98	0.98
Central and Eastern Europe	29	51	74	0.96	0.98
Arab States	83	15	25	0.79	0.98
Central Asia	48	19	33	0.95	1

Source: UNESCO Institute for Statistics Database 2016.

The Basis for Analysis

While secondary level schooling is considered compulsory in developed countries, it is a scarce luxury in much of the world. UNESCO's International Institute for Educational Planning investigated the characteristics of secondary schooling in developing countries, ascertaining that the majority of them will face acute problems in financing secondary education expansion given the present conditions and cost structures (Lewin and Caillods 2001, 58). The problem is twofold: first, countries with low educational attainment rates at the secondary level are unable to finance substantially higher rates of participation given the current cost structure; second, the high cost and poor quality of primary and secondary education is precluding students from initial enrollment and retention in school.

In sub-Saharan Africa, growth in enrollment rates for secondary schools has occurred in the past half-century, with Nigeria accounting for the largest increase: the country's 6 million secondary students eclipsed the 400,000 enrolled in 1970. Despite this growth, sub-Saharan countries still have the world's lowest secondary school participation and the supply of quality post-primary education and vocational training is not nearly enough to match the swelling demand (Provost 2014). Low enrollment rates are not always an issue of whether households prioritize education, but rather an issue of feasibility, accessibility, and quality. Choosing appropriate curricula to offer during and after primary school is a growing matter of concern, and will only become more critical as the initiatives and policies to encourage participation at the primary level start to bear fruit.

The quantitative expansion of primary or secondary education enrollment rates in Sub-Saharan Africa is an important metric of education progress. As one might expect, countries with low enrollment rates at the primary level are expected to have lower enrollment rates at the secondary level, implying an overall failure of the system for its students. The students who do enroll in secondary education may not be able to stay in school because they have not been adequately equipped from primary. Enrollment gives a general idea of a school system's overall quality; even more telling, though, is the number of years spent in school. Geographic and economic disparities push many children, who would otherwise be able to enroll, out of the education system after a short period of time (Ombati and Mokua 2012). The combination of grade repetition, dropout rates, and poor teacher quality certainly halts the universal education Millennium Development Goals, but salvaging this mission requires a deeper understanding and suitable revamping of local policies—as well as region-specific knowledge, which will shed more light on the challenges that hinder educational achievement. This thesis will focus on Ghana, Botswana, Rwanda, and South Africa in order to identify challenges representative of broader trends in the region. These case studies will offer insight into the complexities of educational success that mere educational attainment may not show.

The limited number of years spent in school can be worsened by other bottlenecks in countries' education systems, primarily the costs of education. An increase of actual costs of basics such as tuition fees and school uniforms compounds with the opportunity costs of being away from household chores and employment. Because international aid has so heavily focused on primary education, the average cost of secondary education in sub-Saharan Africa is about 40 percent of individual spending (Provost 2014).

Additionally, students often are expected to pass a national exam before attending secondary school, causing low admission rates if the primary education does not prepare students for the test. It is partially due to low levels of retention at the primary level, that approximately two thirds of sub-Saharan African children are essentially barred from secondary school completely (Provost 2014). Private schools have emerged as an alternative option for education; however, these private schools are exclusive, often more expensive, and frequently not better.

While there are many indicators of the quality of a school system—from grade repetition, test scores, teacher quality, dropout rates, etc.—one of the simplest measures of the quality of a school system is a country's average number of years a student spends in school. If a school system is accessible, affordable, and beneficial, students are expected stay in the system for a longer period of time. Therefore, a highly effective system will reflect a longer duration of students staying in school than an ineffective one. Because of this, the number of a years a typical student spends in school is a metric of the quality of the overall school system.

To be clear, this metric is likely more useful in developing education systems than it is in more developed systems where there is a higher rate of retention. In countries like Norway or Korea where most students attend college, other metrics like test score, teacher quality, or dropout rates may be better metrics of overall performance—and these metrics are more widely available in developed countries. In developing countries, where the opportunity cost to staying inside the classroom is higher, years of sustained enrollment in school is both readily available and an indicator—albeit somewhat problematic—of total school quality.

Identifying Key Conditioning Factors

If primary school adequately prepares students for the next phase of the education cycle, students are less likely to drop out of school and more likely to progress to secondary school and stay enrolled—especially if the students and their families believe that more schooling will be effective at creating future opportunities for the student. In order to realize the strong economic return of investing in education, policymakers face two challenges: they must make schools accessible and effective for students. However, there are a variety of external variables that can detract from the overall implementation and effectiveness of educational achievement. In an attempt to lessen the relevance of some confounding effects of educational success, this thesis uses a regression analysis to control for these variables:

1. Average per capita income
2. The percent of rural population
3. The rate of intentional homicide

By controlling for each country's inputs in the regression on average years of secondary school attended, this study can deduce policies that impact a nation's educational success. The paragraphs below address each of these control variables in turn and explain why some variables are excluded from the regression model.

Chapter 1 emphasizes the mutually beneficial relationship between education and a country's economic strength. Education is widely considered fundamental to development, and poor educational infrastructure represents both a cause and a manifestation of poverty. Sufficient education requires proper infrastructure, teacher-training, and sustained high costs. As education is largely financed by the government, the stronger a country's economy, the more resources it has to improve its education

system. In sub-Saharan Africa, distributing the share of domestically generated revenue is a challenging trade-off among increasing public spending, taxes, and debt sustainability (Bruneforth et al. 2011, 19). Thus a country's economic strength, determined by average per capita income, will positively impact its educational attainment at all levels of schooling, and must be controlled for in determining the impact and efficacy of education policy.

Moreover, rural students tend to underperform when compared to their urban counterparts (Zhang 2006, 583). It seems appropriate to assume a woman who has grown up in an urban area is more likely to have received more primary education than a woman in a rural area, and will consequently stay in school longer. Additionally, there are less domestic pressures encouraging an urban student to leave school. Rural children are faced with the task of domestic chores and agricultural work, which may appear more economically beneficial for the household in the short term. One study analyzing education in Zimbabwe found that controlling for urbanization had the most pronounced impact on educational attainment (Kravdal 2002). The urban-rural balance among sub-Saharan countries can control for populations that are particularly vulnerable to educational disadvantage and, therefore, this disparity must be controlled for when analyzing sensible education policy.

Lastly, many countries in sub-Saharan Africa have suffered catastrophic massacres rooted in entrenched ethnic tensions and refugee crises. Attacks on schools, human rights violations, and diversions of resources to military spending explain how this regional volatility destroys educational opportunity for children in conflict zones. Moreover, the effects of loss, injury, insecurity, psychological trauma, dislocation of

family and community life, and displacement are difficult to measure, but irrefutably deprive entire populations of maximizing their development.

A 2011 UNESCO Education for All (EFA) report found that children in conflict-affected areas are 30 percent less likely to enroll in secondary school than in regions without substantial conflict (UNESCO 2011, 133). It also found that literacy levels for young people are drastically smaller than in other countries, at 79 percent and 93 percent respectively, which exacerbates the gender parity (UNESCO 2011, 133). Moreover, the average mortality rate for children under five in these conflict-ridden areas is more than double the rate in other countries. Identifying conflict-afflicted countries is difficult, given the myriad forms of violence that expand past the standard definition of warfare; however, the heavy burden that violent conflict extracts on education means it must be controlled for when analyzing education policy. Therefore, this thesis will control for the estimated rate of homicide rather than implementing a binary war/non-war variable.

Institutional strength, stability, and credibility also influence education policy. Ordinarily, more stable governments are better able to provide the foundation of education and development, while corrupt institutions may not direct funds in the best interest of its people. However, as institutional reliability is reflective of a government's efforts, priorities, and structures, it would be inconsistent to control for this factor in the regression model for educational attainment. Additionally, economic strength alone cannot account for the overall success in educational attainment. As shown in Table 3, sub-Saharan African spending on education has increased by more than six percent annually—twice that in Mozambique and Burundi (Bruneforth et al. 2011). Still, a total of 32 million children in the region remain out of school. Therefore, government

spending on education will be considered when analyzing each case study, but not included in the regression model.

Table 3: Spending on Education as % of Total Spending in sub-Saharan Africa in 2011

Country	Population ('000)	Total Education spending as % of GDP	Spending on Primary (% of total spending)	Spending on Secondary (% of total spending)	Spending on Tertiary (%of total spending)
Angola	18021	2.6	27.6	42.7	8.2
Benin	8662	3.5	57.6	19	20
Botswana	1921	7.9	19.2	31.3	43.5
Burkina Faso	15234	4.6	65.7	12.2	11
Burundi	8074	8.3	50.8	25.1	20
Cameroon	19088	3.7	29.9	58.6	7.4
Cape Verde	499	4.9	42.9	39	16.1
CA Republic	4339	1.3	48.4	25.4	17.4
Chad	10914	3.2	56.8	27.1	16.1
Comoros	661	7.6	60.5	4.8	34.6
Kenya	38765	6.7	54.7	22.8	15.7
Lesotho	2049	12.4	35.7	20.8	36.8
Madagascar	19111	3	47.2	20.1	17.7
Mali	12706	4.4	39.9	40.7	18.7
Mauritius	1280	3.2	27.9	42.6	11.3
Mozambique	22383	5	56.2	28.5	14.3
Niger	14704	4.5	61.1	22	11.8
Rwanda	9721	4.9	45.3	19.8	29.2
Senegal	12211	5.8	45.5	27.4	26.9
Sierra Leone	5560	4.3	49.9	32.6	17.5

Source: UNESCO Institute for Statistics Database 2016.

Analysis of the Regression Model

Using panel data to control for these key factors, this thesis will build an Ordinary Least Squares (OLS) model for regression analysis. The control regression model will allow residuals analysis to be made to examine the differences between observed and expected traits predicted by a model.

To accomplish this, it is first necessary to identify the main factors impacting the average years of secondary education school and then analyze these variables. This model uses data from the World Bank Dataset and the Barro-Lee Educational Data from 1960 to 2010and spans over 50 years.[7] [8] After performing various fixed effects regressions, the relationship between secondary education, per capita income, and rural populations showed strong statistical significance and correlation.

If one were concerned about the impact of a given control variable, the model would have to test for multicollinearity. If two or more predictor variables are too highly correlated, they detract from the accuracy of the model. Generally, if the correlation matrix shows to be over 90 percent correlated, it should be ignored to avoid the adverse

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[7] The World Bank Dataset includes the World Development Indicators and International Debt Statistics. Both of these databases predominantly collect data that are either from current reports gathered by official sources or by the World Bank's country management units. For consistency, this thesis relies specifically on the data obtained from official services.

[8] The Barro-Lee Educational Attainment Dataset is an estimated extrapolation of the census/survey observations on global attainment from data collected by UNESCO Institute for Statistics and UNDP Human Development Office. It is a panel dataset on education attainment that covers 146 countries from 1950 to 2010 that disaggregates by sex and by five-year age intervals. Missing attainment data is estimated for 15-19 and 20-24 age groups. The dataset is supported by the Korea Research Foundation.

impact of multicollinearity. In this model, as seen in Table 4, the coefficients are in line with empirical predictions and are not at risk of multicollinearity. In line with expectations, countries with higher per capita incomes are found to, on average, have lower percentages of their population be rural and lower homicide rates; the homicide rate shows a weaker correlation to per capita income.

Table 4: Independent Variable Correlation Matrix

	Rural Population	Rate of Homicide	Per Capita Income
Rural Population	1.000	--	--
Rate of Homicide	0.0875	1.000	--
Per Capita Income	-0.5280	-0.256	1.000

While not succumbing to multicollinearity, this is not relevant for this thesis, which focuses only on creating a model that will demonstrate a country's performance.

This analysis first builds these fixed effects regression:

$$SER_{it} = \beta_0 + \beta_1 pci_{it-1} + \beta_2 rural_{it-1} + \beta_3 conflict_{it-1} + \varepsilon_{it}$$

Where SER is the average number of years a student is enrolled in secondary schooling in country *i* at time *t*, *pci* is the reported average per capita income and *rural* is the percent of the population of nation *i* living in rural areas at time *t-1*. ε is the deviation SER_{it} from the mean value of the distribution for each country *i* at time *t* and β_0 is the intercept, which is insignificant for the purpose of this analysis. The results of this regression, for both the world and exclusively sub-Saharan Africa, are in Table 35 (see:

Appendix) and show statistically significant and relatively substantial coefficients for per capita income and the percent of rural populations.

Table 5: Regression Output I

Variables	Average Years Enrolled in Secondary School
Rural Population (%)	-0.465***
	(0.0796)
GDP Per Capita (USD)	0.00505***
	(0.000622)
Rate of Homicide (%)	-0.0119
	(0.170)
Constant	42.38***
	(7.532)
R Squared Within	0.7412
Observations	217
Number of Countries	21

Note: In order to control for time effects, this model used year dummies from 1960 to 2010.
Note: *** = p<0.01, ** = p<0.05, * = p<0.1
Note: the standard errors are in parentheses.

These results imply that a one percent decrease in the percent of rural population is associated with a 0.465 unit increase in the years enrolled in secondary education at the 99 percent confidence level. A $100 increase in GDP per capita is associated with a 0.5 increase in years enrolled in secondary education at the 99 percent confidence level. Rate of homicide, this model's measure of in-country conflict, is not statistically significant, but still shows that an increase in the rate of violence is associated with a decrease in educational attainment at the secondary education level. The constant is 42.38. An R^2 of

0.7412 implies that approximately three-fourths of the variation in average total years of secondary education can be explained by this model.

Using this regression to understand the influences of each variable, this study then created a prediction model to find and analyze the residuals for each country at each point in time. The prediction model is:

$$\widehat{SER_{it}} = \beta_0 + \beta_1 pci_{it-1} + \beta_2 rural_{it-1} + \beta_3 conflict_{it-1}$$

Determining $SER_{dif_{it}}$ as the difference in difference results of actual total years enrolled in secondary school and predicted years enrolled in secondary school indicates the relative over- or under-performance of each country. Because the prediction model for both the World and Sub-Saharan Africa converge (see Appendix: Table 35), this justifies analyzing only the Sub-Saharan Africa residuals, making the prediction model:

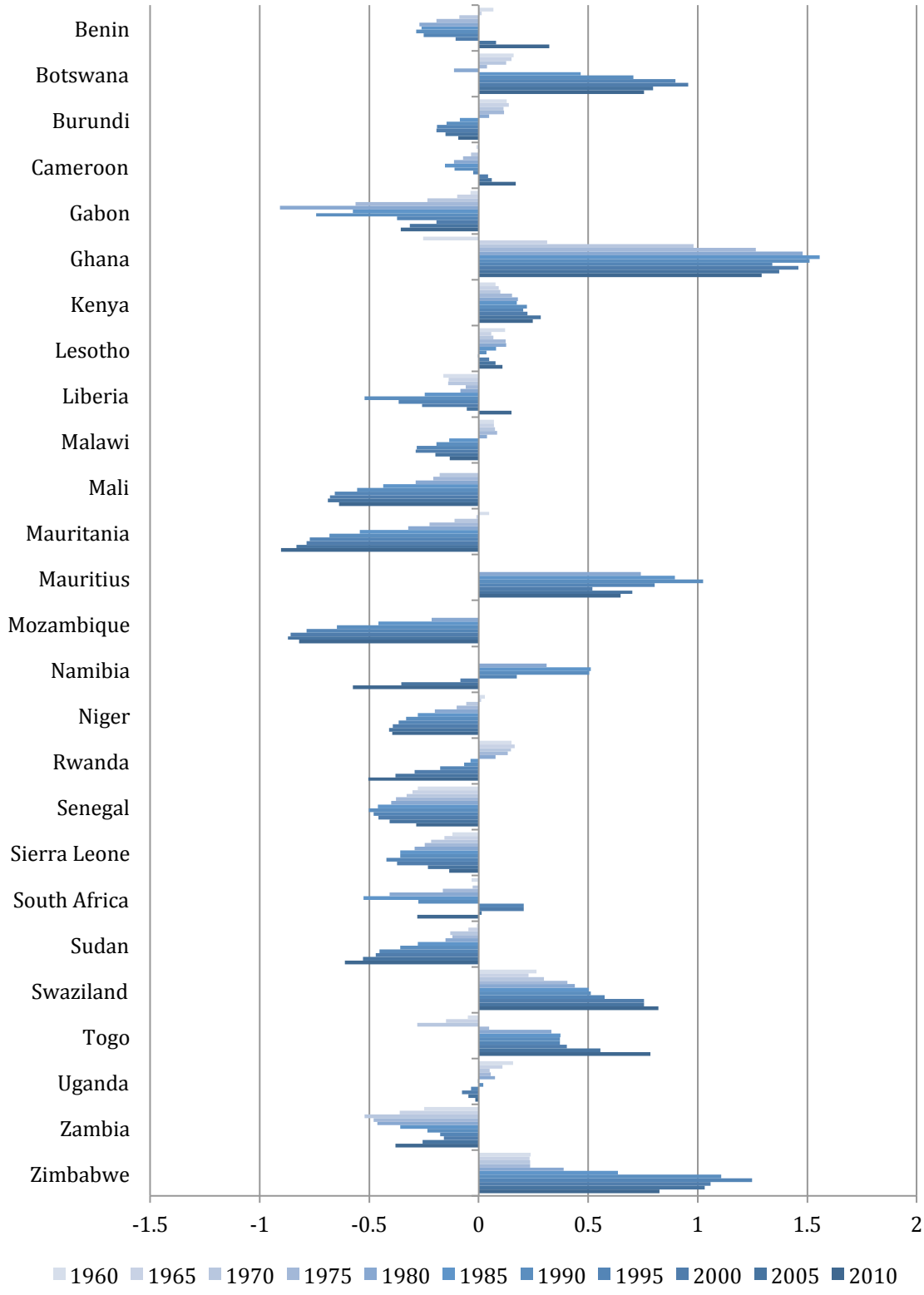
$$SER_{dif_{it}} = SER_{it} - \widehat{SER_{it}}$$

Figure 1 shows the outcomes of the prediction model. The residual difference is the predicted amount of time spent in secondary school for each country in a given year, spanning 1960 to 2010. Thus, if a country is found to have a positive residual, the nation has a more effective secondary education policy than a country with a negative residual. For example, in Botswana in 2010, the average years of secondary schooling were 3.19, while the predicted amount of schooling in comparison to other countries in the region was approximately 2.43. The residual between the two is 0.76 years of schooling.

Some countries stand out as particularly successful, e.g. Botswana, Ghana, Mauritius, Swaziland, and Zimbabwe. Others perform especially poorly, given their predicted secondary schooling, such as Mauritania, Mozambique, and Zambia. Therefore,

to examine relative successes and failures, this thesis selects a few “outliers” to examine educational policies, historical context, and various projects implemented: Rwanda, South Africa, Ghana, and Botswana.

Figure 1: Relative Country Performance by Year



Chapter 3: Case Study Analysis

Rwanda, South Africa, Ghana, and Botswana were chosen to identify the diversity in educational achievement throughout the continent. Rwanda shows a downward trend in average years spent in secondary school, South Africa shows inconsistency, Ghana is moderately successful, and Botswana proves extraordinarily successful. While this regression is thorough, data cannot account for some more qualitative factors that impact educational attainment in countries. For instance, the percent of rural population does not fully account for the legacy of apartheid in South Africa, the "sons of the soil" mantra that was promoted in Rwanda until the genocide, or the rural discrimination and corruption common in Northern Ghana. The rate of intentional homicide does not account for the long-term ramifications of ethnic bias and racism on education. Per capita income does not fully encompass how education is spent, the quality of teachers or classrooms, or what the actual cost of education is for each country. Moreover, per capita income does not incorporate the evolving privatization of secondary schools and the quality of teachers. The regression simply permits the platform to identify useful case studies. The case study analysis is intended to offer substantial qualitative factors that can hinder secondary education attainment by drawing on common threads of education policy. These are challenges are:

1. Prolonged ethnic and racial tensions that lead to disadvantaged populations
2. An acute shortage of adequate learning materials and trained teachers
3. Inappropriate or insufficient curricula, creating a disjunction between labor supply and demand
4. High out-of-pocket costs and opportunity costs of education

The following section will explore institutional policies and reforms that have contributed to educational productivity to find influences that can contribute to success regardless of context. Similarly, certain case studies that focused on under-performing educational systems will be analyzed to determine universally negative impacts on education. After an in-depth analysis of each case, it will offer a set of policy recommendations considering these qualitative factors. Namely, the different African governments must address pro-poor education policies to incorporate the largely disadvantaged rural populations to assure education to be accessible, affordable, and equitable for all.

Case Study 1: Education in Rwanda

As with virtually every aspect of Rwandan life, education policy in the country is decisively shaped by its horrific period of genocide in 1994.[9] In the case of Rwanda, this involved extreme Hutu nationalists aiming to exterminate the ostensibly privileged Tutsi minority and Hutu moderates.[10] For three months, a "kill or be killed" mentality infected the small country through a meticulously organized campaign of slaughter. The massacre slowly concluded with the Rwandan Patriotic Front (RPF) combatting violence with violence, killing thousands of Hutu civilians and arresting many more who demonstrated Hutu-power ideology (Human Rights Watch 1999).[11] The RPF is a rebel army that consists primarily of Tutsi refugees who grew up in Uganda. Paul Kagame, now the president of Rwanda, led the RPF as they took control in the chaotic country, and began working to establish order.

President Kagame, a Tutsi, has been internationally praised for his reforms, which sparked impressive economic growth following violence so profound and grief so

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[9] International law defines genocide as "the intent to destroy, in whole or in part, a national, ethnical, racial or religious group" (Convention on the Prevention and Punishment of the Crime of Genocide 1948).

[10] A census from the 1930s is the only recorded ethnic identification. Approximately 84 percent of Rwanda's population identified as Hutu, 15 percent as Tutsi, and the remaining 1 percent as Twa. These identities were indicated on cards, which Rwandans were obliged to carry (Human Rights Watch 1999). While it was not hard to move throughout groups prior to this registration system, it became challenging with this official population registration. While the Tutsis were targeted in the genocide, both Hutu moderates and Twa were victim to the extreme violence.

[11] An estimated one million Hutu civilians, fearing retaliation attack from the Tutsis, were driven to the DRC in 1994. This influx of Rwandans has directly contributed to over two decades of unrest in the region. Hidden among the refugees were some perpetrators of the genocide who, exploiting the ongoing insecurity in the DRC have committed multiple atrocities against Congolese civilians and recruited child soldiers claiming to "protect the thousands of remaining Hutu refugees…with no official refugee status" (Hellyer 2015).

pervasive. Through a national consultation process, Kagame sought advice from China, Singapore, and Thailand on how to transform Rwanda from a highly impoverished country to "East Africa's economic hub" (UNDP 2008). Out of these consultations came Vision 2020, which ambitiously defines six pillars for development, of which the most relevant for this thesis is the enshrinement of education as a key in creating a skilled labor market (Government of Rwanda 2016). In a relatively short time, substantial gains have been made since the genocide, as seemingly pro-poor educational policies continue to be enacted; however, as shown below, many policies have proven superficial, showing that this advancement has not been completely beneficial to all.

This section will expand on the poor state of education pre-1994, which was only worsened by the long-lasting role of ethnic discrimination imbued in every part of society. Then it will show how both the genocide and its inappropriate responses have severely impeded Rwanda's propounded modernization goals of: guaranteeing high quality education and appropriate curricula, eliminating the costs of schooling while offering future employment opportunities for graduates, and unifying a country burdened by ethnic tensions. Indeed, if the current educational framework continues to operate this way, educational attainment will likely continue to deteriorate.

State of Education Pre-1994

In identifying factors that led to the mass atrocity in Rwanda, there is a shared international consensus that the educational framework and its unofficial quota system at least in part, exacerbated the existing ethnic tensions. Before the events of 1994, there was a quota system that overtly discriminated on ethnic and regional criteria, rather than

scholastic performance. This practice was rooted in the colonialist Belgian government, which favored Tutsis, 15 percent of the population, over Hutus. Tutsis were prioritized at each level of education, as seen in Table 6; Astrida College was the most prestigious school in the country and gave clear preferential treatment to the Tutsi minority.

Table 6: Astrida College Enrollment by Socio-Identity Group

Year	Tutsi Students	Hutu Students
1932	45	9
1945	46	3
1954	63	19
1959	279	143

Source: Prunier, 1995: 33.

The colonial history curriculum portrayed three distinct ethnic groups that identified Hutu as aboriginal to Rwanda and Tutsis and Twa as immigrants. In 1962, with newly gained independence and a Hutu usurping of power, the Hutu leadership intensified these arbitrary distinctions and ostracized the Tutsis as being a foreign alien group, with a "tenuous right to Rwandan citizenship or land" (UNESCO 2003, 103). Access to education switched from undermining the Hutu populations to overtly discriminating against the Tutsis, a policy that was legalized in the 1985 Education Law (Leach and Duune 2007, 116).

That these ethnic and regional quotas, based on arbitrary information and one outdated population census, were enforced at the educational enrollment level represents

how strongly these ethnic tensions were engrained in society. Regional quotas meant that those who lived in geographical proximity to the President or his relatives received favored status; ethnic quotas were based on a national census conducted in 1933. The formula for the population census involved the number of livestock owned: those who had between two and ten head of cattle were labeled "Hutu," those with more than ten labored "Tutsi," and those with only one cow or nothing were labeled "Twa" (Leach and Duune 2007, 115).

Table 7 demonstrates how the educational quota system overrode academic considerations, and provided false justification for discriminatory educational access (UNESCO 2003, 44).

Ethnic tensions have long been present in Rwanda, but these quotas taught and justified discrimination, resentment, and injustice. Ethnic and regional quotas, in tandem with ethnically charged history, reaffirmed and reflected destructive trends in Rwandan society about identity. Teachers taught differences instead of commonalities, and propounded the Hutu-power ideology that culminated in a wanton massacre.

Table 7: Primary School (1-6) Enrollment by Province and Socio-Identity Group 1989/1990

Province	Hutu	Tutsi	Twa	Other	Total
Butare	90,052	21,146	323	731	112,252
Byumba	109,477	3,138	154	1,278	114,047
Cyangugu	66,344	8,573	183	247	75,347
Gikongoro	57,014	9,906	195	27	67,142
Gisenyi	107,265	4,002	304	53	111,624
Kibungo	80,519	8,672	93	198	89,482
Kibuye	58,846	10,556	72	19	69,493
Kigali	147,084	19,801	283	1,918	169,086
Ruhengeri	116,912	728	124	28	117,049
Total	951,912	99,924	2,052	4,641	1,058,529
Percentage	89.9	9.4	0.2	0.4	100

Source: UNESCO 2003, 234

Further compounding this dangerous context was the inadequate quality of the schools. The actual classroom was recognized as inadequate. Part of the tragedy of the massacre was that Rwanda was beginning to reform their curriculum in the early 1990s by:

- Rationalizing ongoing syllabi to include environmental studies, health and child care, nutrition, and agriculture;
- Redesigning learning materials;
- Planning redeployment of Primary 7-8 teachers whose classes had been closed in the early 1990s because the teaching and learning materials were insufficient;

- Developing new curricula for the new six-year primary cycle and lower-secondary schools, especially in child health and nutrition;
- Discussion on alternative utilization of primary-school workshops;
- Addressing the selection process for admission for secondary schools (Leach and Dunne 2007, 116).

By 1992, school equipment and teaching materials were insufficient, and the quality of education was abysmal. The overall culture in Rwanda did not prioritize education, instead praising a "good Rwandan" as a pastoralist, or a "son of the soil," who fully understands the land. The pre-genocide education system is best summarized by the then-Minister for Education, Romain Murenzi, in 2002, who stated:

> It is generally felt that the education and specifically the school curriculum failed the nation in 1994. The curriculum was silent where it should have been eloquent and vocal where it should have been silent. There was much about human difference and little about human similarities, too much about collective duty and a little about individual responsibility and too much about the past and too little about the future (quoted. in Clarke and Donoghue 2013, 81).

The institutional affirmation of the Hutu ethnicity through its discriminatory policy legitimizes the dividing, longstanding prejudice between the "haves" (the Tutsi) and the "have-nots" (the Hutu). Radicalized animosity was solidified by this "moral exclusion" and "social death" of the Tutsis, culminating in the world's fastest and most efficient massacre in history (Uvin 1999).

Reconstructing Education in a Post-Genocide Rwanda

If Rwanda's educational system was fragile before the genocide, it was shattered during. Schools were ransacked, the Ministry of Education was brought to a standstill,

and students and teachers were either murdered or fled (UNESCO 2003, 48). UNICEF estimates that, during the genocide, only 648 of the 1,188 schools—often sites of mass atrocities themselves—were operational (UNESCO 2003, 48). The irrational role of teachers is reflective of the abject chaos facing the society as a whole: teachers often symbolized the elite and educated, and therefore were targeted; but they also could be Hutu extremists, and harm their colleges. About 75 percent of teachers were either killed or subsequently imprisoned on genocide charges; 3,000 primary school teachers were murdered (King 2013, 122). By the end of the genocide, the student to qualified teacher ratio, already an unimpressive 55:1, deteriorated to 124:1 (UNESCO 2003, 48). There was an acute shortage of teachers, schools, and materials to add to the unimaginable extent of loss and tragedy Rwandans had to cope with.

Almost miraculously, the RPF re-opened primary schools by September and, once functioning, secondary schools followed. In the wake of one million deaths, razed infrastructure, and a broken society, there was impressive educational expansion. By 1999 there were 2061 new primary schools and the net primary enrollment rate reached 65 percent (Pells et al. 2014, 295). Teacher (qualified or not) to student ratio returned to 54:1 (UNESCO Institute for Statistics). The new education policy revolved, first and foremost, around targeting national unity and reconciliation. Seemingly non-discriminatory socioeconomic, linguistic, and ethnic policies were instituted alongside a new national curriculum. Quotas and school fees were “removed”; advancement was based solely on merit. There were no more identification cards that included ethnicity or affiliation. The speed with which this education legislation passed was impressive, but, as

seen below, it obscured the inadequacies of these policies and their failure to serve the entirety of Rwanda's people.

The nascent regime first abolished anything in the education system that echoed—what was euphemistically referred to as—"the errors of the past" (UNESCO 2003, 55). There was no history curriculum that favored Tutsis, as it was under colonialism, and no history that favored Hutus, as they did post-independence; instead, there was and is no history taught at all. Lacking financial resources and serious manpower, the Tutsi dominating government had to create an entirely new pro-education society out of one that was believed to have failed the country (King 2013; Freedman et al. 2008). The moratorium on teaching history in the classroom allows the government to promote one official narrative about the Rwandan identity, but fails to facilitate critical thinking or democratic teaching methods that inspire innovative entrepreneurs to bolster a knowledge economy (Freedman et al. 2008, 664).

Part of President Kagame's Vision 2020 was the decision to shift language policy from French to English in schools. Virtually overnight, the coterie of Tutsi political elite, mainly from Anglophone Uganda, changed the medium of instruction from French to English. Officially, it was to strengthen Rwanda's economic ties to the West and its English-speaking neighbors, Uganda, Kenya, and Tanzania. Unofficially, it is understood that Rwanda's detachment from French is rooted in the RPF's bitter relationship with the country.[12] Whatever the justification, the hasty transition to English proved a massive

[12] During the Rwandan Genocide France actively supported the Hutu-led government against the Rwandan Patriotic Front, providing arms and military training to the *Interahamwe* and the *Impuzamugambi*, which were the predominant youth militias that operationalized the genocide. During the genocide, French troops

undertaking for a country where the mother tongue of 90 percent of the population is Kinyarwanda. Given that advancement is merit based, the language shift has subtly conferred academic advantages to this elite group who already are familiar with English. The policy clearly has serious ethnically bias undertones (King 2013). Furthermore, teachers are now expected to teach in a language they are still learning. This policy, promoted as a move toward Rwanda's overall development, fails to consider the entire country's advancement.

In prioritizing modernization for the country, Vision 2020 deems technological advancement an integral component of education reform. However, this does not always respond well to the current societal priorities. For instance, a One Laptop per Child (OLPC) initiative crowded Rwanda's primary schools in 2012. The program aspired to "provide each child with a rugged, low-cost, low-power, connected laptop," in hopes of encouraging creative thinking (One Laptop per Child). 210,000 laptops were delivered at almost $200 piece to students and teachers all over the country but resulted in little to no improvement in math or reading.[13] The ed-tech initiative neglected to train the teachers and has been criticized for being more political than pedagogical (Wadhams 2010). While President Kagame is striving to make Rwanda a technology and services hub, and the OLPC program was a way to spread electricity and Internet to the 93 percent of the

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were deployed to prevent further waves of genocide, but have been accused of enabling Hutu-power extremists to escape to the DRC (Penketh 2014).

[13] Rwanda attempted another decentralized program, Girinka (One Cow Per Family), which proved much more effective. One dairy cow provided to poor households increased agricultural output through better soil fertility and increased incomes (Habumuremyi 2013). While not exclusively under the auspices of education policy reform, this kind of program offers a more innovative and appropriate way to combat poverty than a something like the OLPC initiative.

population without it, the funding that went into this ineffective and costly initiative could have probably been better allocated (Wadhams 2010). Indeed, it is not without some irony that the Education Ministry willingly invests in a burdensome costly technology-centered curriculum in the agricultural country while still maintaining a moratorium on history lessons.

The Costs of Education

As education was posited as the primary tool to nation building, compulsory and ostensibly "fee-free" education policies at the primary school level were established post-genocide. This initiative, and its implementation, has been praised internationally but does not address the hidden costs of education, such as examination fees, after-school coaching, 'voluntary' Parent-Teacher Association (PTA) contributions, school uniforms, learning materials, meals and potential compensation in school finances (Williams et al. 2014, Akaguri 2013). [14] [15] Parents are de facto members of the PTA and are required to pay a certain amount to supplement teacher salaries and provide the labor to construct classrooms with government provided materials. The PTA additional funds are determined by school, so wealthier urban regions contribute more financially than their poorer rural counterparts to improve schools. Thus, while the "fee-free" education initiative has been met with an impressive surge in enrollment rates, universal education

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[14] Implementing some form of fee-free education policy has been a recent phenomenon in sub-Saharan Africa, see: Malawi in 1994, Uganda in 1997, Tanzania in 2000, and Burundi, Cameroon, Ghana and Kenya in 2003 (Nkurunziza et al. 2012).

[15] While school uniforms are not officially mandatory, that information has been poorly disseminated and it is a de facto requirement in most schools (UNESCO 2003, 137). On average, a school uniform is ten to 20 times more expensive than other school fees.

has not yet been reached and a gap remains between enrollment figures and quality education (Williams et al. 2014).

The supposedly "fee-free" schools have also led to a closing of many of the higher quality private schools; at least 20 private schools closed between 2013 and 2015. The failing private schools tend to be in rural areas. If a private school can only perform marginally better than a public school, then it cannot be expected to compete with lower-fee education offered by the public schools. Meanwhile, the private schools in urban areas are thriving. Educated teachers may be more inclined to work at an urban private school, where they would receive a higher salary and perhaps be better qualified. It is assumed that the Rwandan Tutsi minority, who are mainly based in Kigali, can afford to attend these thriving private schools in urban areas, whereas rural areas are subject to cheaper but poorer quality schools. A similar effect occurred in Kenya, when a nationwide abolition of public fees in 2003 led to a dramatic shift *toward* private schooling, as the quality of the public schools was notably inferior (Nkurunziza et al. 2012). Thus, despite efforts to improve educational access for all, the majority of the quality education is taught by and to Tutsis in urban areas. Similarly, growth in higher education has become more easily accessible and the Vocational Education Training (VET) programs have become an essential part of the education system. In Rwanda, the VET programs run in tandem with secondary education and focus primarily on vocations such as building and construction, plumbing, tourism, and hairdressing. These occupations are generally focused on urban, rather than rural, development.

The hidden costs and disparity in education quality is evident in Rwanda's primary, in comparison to secondary, school enrollment rates. While Rwanda boasts

some of the highest primary school enrollment rates in East Africa, with primary education standing at 97 percent for boys and 98 percent for girls (UNESCO 2003, 41), secondary school enrollments have been slow to expand. The Rwandan government responded to this by introducing its Nine Year Basic Education Program (9YBE), which adds another three years of supposedly free secondary education onto the relatively free education from six years of primary. Still, the required PTA contributions prevent education from being genuinely accessible and equal for all and the surge in enrollment rates in public schools has been met without adequate teachers or materials, corresponding to high dropout rates, repeated grades, and a decline in educational outcomes (Leach 2014).

While socio-economic theory may assume that poor parents are responsive to reductions in school costs, there is also a factor of opportunity costs that hamper enrollment rates (Krishnaratne et al. 2013). Although the rural population of Rwanda is slowly decreasing, the majority of citizens are still overwhelmingly dependent on agriculture, so the opportunity cost of time spent in school is high, especially once reaching secondary school age (Nkurunziza et al. 2012). This is exacerbated by the lack of demand for skilled labor in these subsistence-oriented rural areas, deterring parents from putting their children into formal education. The "fee-free" policy has been enacted in Rwanda to symbolize that the structural barriers to attain educational achievements have been removed. Thus, the onus of responsibility is shifted away from the Education Ministry and onto families that choose not to send their children to school. When a family cannot afford the hidden costs of education, the fact that these supposedly "fee-free"

schools exist indirectly places blame on the culture and "sons of the soil" mindset imbedded in the region (Pells et al. 2014, 305).

The urban-rural disparity may reflect the transformation undergone by Rwanda when redefining what makes a "good Rwandan" after the genocide (Pells et al. 2014, 297). Like many other developing countries, Rwanda defines the role of young people as one that accommodates the country's development goals (Cheney 2007, 41). Prior to 1994, subsistence farmers were romanticized because of their "intimate knowledge of the ecosystem and their ability to extract resources from the land" (Pell 2014, 297). After the genocide, an ideal citizen would "move the country beyond subsistence agriculture to a knowledge-based middle-income country by 2020" (Pell 2014, 297). This idealization paralleled the ethnic political dominance. When Hutus, who were predominantly agriculturalists, were in power, a "good Rwandan" was a "son of the soil." When the upper echelon of Tutsis, mainly consisting of merchants and intellectuals, were in control, Rwanda became a country whose *raison d'être* became education. The strong push for a knowledge-based society did not fully account for the culture that was so deeply entrenched in the country. The policies enacted have, therefore, been less cognizant of the demands and desires of the entire population, but have indirectly favored the Tutsi minority. This claim is only inferred, as data is difficult to acquire, given the abolishing of any Hutu, Tutsi, or Twa identification shortly after the RPF came to power. Still, understanding that the majority of Tutsi are in Kigali and the majority of Hutu are based in rural areas, this case study concludes that the Rwandan government's radical departure from the societal value through education policies tend to favor wealthier urban populations, who tend to be Tutsis.

UNESCO (2014) lists Rwanda next to Laos and Vietnam as a model for reducing out-of-school populations by at least 85 percent in five years. This rapid growth in enrollment after such terror is certainly impressive; however, evidence shows that its policies may fail to achieve reconciliation and economic development—the two main objectives for the education system.

Due in part to both the genocide and the role of education leading up to the tragedy, Rwanda's government has failed to provide the majority of its population with accessible and quality education. In an attempt to abate any lingering ethnic fragmentation, the moratorium on history and the language policies have left the classroom curricula incomplete. In an effort to modernize, the government has misallocated funding away from teacher-training and affordable education and instead towards dead-end tech initiatives. Rwanda must openly acknowledge the societal realities to improve the divide, reconciling the genocide rather than ignoring it and embracing its rural population in education reform rather than excluding it.

Case Study 2: Education for South Africa

For an emerging market with as much economic prosperity as heralded in South Africa, their poor educational performance is inexcusable. South Africa's education system is still in urgent need of reform, or the country will continue to invest heavily in education with a virtually negative return on human capital. While Rwandan education still remains afflicted with ethnic fragmentation, the following case study examines the impact of apartheid on South Africa's education system to underline the necessity of inclusive and adequate policies to adequately combat discrimination and unequal education. The racial disparity in schools is found in both the cost and quality of education. This thesis finds that the Curriculum 2005 and the Outcomes-based Education initiatives have severely exacerbated the challenges facing the education systems and will continue to do so without appropriate reform. Finally, South Africa faces the challenges of youth unemployment and HIV/AIDS. This section would be remiss not to acknowledge how these factors intensify the education system and society as a whole. Education in South Africa is fraught with extreme racial disparity, high costs for insufficient education, a failing curriculum, and a worrisome future. This section hopes to address these shortcomings specifically to provide a platform in the following chapters on how to manage and improve education for all students.

Apartheid and Bantu Education

While ethnic fragmentation hampered education in Rwanda, South Africa's apartheid dominates its education history. Apartheid, an Afrikaans term that refers to "the state of being apart," was a system of enforced racial segregation that involved

institutional restructuring to serve the interest of white supremacy and the all-white National Party government that stood from 1948 to 1994. One of the most racist laws under apartheid was its Bantu Education Act of 1953 (Fiske and Ladd 2005). Education was a key vehicle in this process of segregation, through which the country chose to handle the "native problem" of black South Africans (Fiske and Ladd 2005, 41). Prime Minister and Minister of Native Affairs Hendrik Verwoerd extolled the Bantu education as "beneficial" for the economy as a whole:

> There is no space for him [the non-white African] in the European Community above certain forms of labor [ie: unskilled labor and servitude]. For this reason it is of no avail for him to receive training which has its aim in the absorption of the European Community, where he cannot be absorbed. Until now [1953] he has been subjected to a school system which drew him away from his community and misled him by showing him the greener pastures of European Society where he is not allowed to graze (quoted in Gilmore and Donald 1999, 341).

Each department of education was separated by race: the Department of Education and Training was responsible for black South Africans (80 percent of the population), the House of Delegates was responsible for Indian South Africans (2 percent), the House of Representatives was responsible for "colored" South Africans (9 percent), and the Transvaal Education Department was responsible for white South Africans (9 percent) (Morrow 1990, 174). The curriculum denigrated black Africans' history, culture, and identity by perpetuating racial myths and stereotypes in its curricula and textbooks.

Apartheid was specifically designed to bar non-whites from participating in highly remunerative roles in the economy. The adverse effects on education for non-white students cannot be understated: dilapidated school buildings, overcrowded

classrooms, inadequate teacher-training plagued the schools and preserved the social hierarchy that correlated race and class (Obed Bapela 2006). The glaring inequalities concerning classroom quality can be found in Table 8, where the student-teacher ratio for white students was less than half of that of black students and the difference in certified teachers was a staggering 15 percent for black students and almost 100 percent for white.

Table 8: Government Spending on Education per Child 1982 (in SA Rand)

	Government Spending on Education	Student-Teacher Ratio	Teachers with Certificates
White Student	1211	1:18	96%
Indian Student	771	1:24	Unavailable
Colored Student	498	1:27	Unavailable
Black Student	146	1:40	15%

Source: Kallaway 2002, 40.

At its peak, the apartheid regime allocated ten times the amount of funding for schools serving white students as it did for schools serving nonwhites (Fiske and Ladd 2005). Educational equity is often defined in terms of equal educational opportunity, equal treatment, and equal educational adequacy (Fiske and Ladd 2005). Apartheid was, simply put, the antithesis of educational equality.

Failed Transitioning from Race-based to Race-blind

By the time the democratic elections of 1994 ended the apartheid era, the nascent democracy, led by President Nelson Mandela, inherited a fragmented governmental institution and a belligerent society keen on total structural overhaul. As one analyst phrased it, the new government was charged with the task of "changing the wheel while the car was moving" (Sehoole 2003, 1). The education ministry first reconstructed the 18 racially divided departments into nine provincial "race blind" ones, under the auspices of one united national education ministry (Gibson 2006, 785). The expectation for this united ministry was both to modernize and unify a country that had been fiercely divided. Funding was now distributed equally, with each province receiving the same lump sum grants based on population size. The districts could then autonomously allocate that grant autonomously to its health, education, and welfare services. At the policy level, it appeared that equity defined as race-blindness was achieved.

This pro-poor educational policy has, however, continued to further the legacy of apartheid. Public schools have virtually been separated into two bands of schooling: the fee-schools which tend to be smaller, better performing, and target the wealthiest 20 to 25 percent of the student population; and the larger, worse-performing free-schools, that accommodate the poorest 75 to 80 percent (Spaull 2013). Because the testing outcomes do not report race or economic status, it is challenging to determine racial education gaps. However, education expert Nick Taylor examined the Western Cape in 2004 to find that 80 percent of grade 6 children who had attended formally exclusively white primary schools could read at the correct level, whereas less than 50 percent of learners attending formerly non-white primary schools could read at the right level (Taylor 2009).

Moreover, he found massive disparities in performance between schools, to a large extent due to the structural repression faced by black Africans. The results of Table 9 powerfully illustrate the scale of the achievement gap.

Table 9: Distribution of high schools by performance in Senior Certificate mathematics, 2004

	Formerly Privileged*	African	Total	Proportion of total	Proportion of HG math passes
Top Performing **	380	34	414	7%	66%
Moderately Performing	254	573	827	14%	19%
Poor Performing	600	4,277	4,877	79%	15%
Total	1,234	4,884	6,118	100%	100%

Source: Taylor 2009, 11
Note: *Under apartheid "privileged" schools were administered to white students.
Note: **Top performances produce at least 30 percent of students who pass the exam, with 20 percent performing the strongest nationally; moderately performing schools produce at least 30 percent at a standard grade; poor performing schools fail to achieve 30 percent passes in math.

Equally distributed public education grants fund teachers salaries, school infrastructure, and textbooks. About ten percent of the education budget is also allocated for a pro-poor subsidy for books and learning materials. Public schools are legally accessible to any student of any race. However, many of these "inclusive" public schools can discriminate socioeconomically. Two out of five public schools are allowed to charge additional fees to attend the school (averaging to about $130), which disqualifies poorer,

often non-white learners from admission (Taylor 2009, 14). These fee-schools tend to be in wealthier, all-white areas and can acquire more financial support from their students, and therefore can reinvest in more resources. Thus, economic and cultural influences encourage students to remain in their same, pre-1994 schools: "most African learners were still in mainly African schools" (Fiske and Ladd 2004, 4).

That these fee-schools can discriminate based on socioeconomic status, and because race and economic standing are so intertwined in South Africa, the movement from race-based to race-blind policies has proven to be merely symbolic. As shown in Table 11, South Africa still finds that large racial differences in terms of progress and educational attainment persist and continue to impact the distribution of teachers (Bhorat and Oosthuizen 2008, van der Berg 2008). The 2012 World Economic Forum ranked South Africa 132 among 144 countries in primary school education and 143 in math and sciences (World Economic Forum 2012).

Table 10: SACMEQ II Scores for Grade 6 Math in year 2000

QUINTILE	(Poorest)1	2	3	4	(Richest)5	Mean
Botswana	491	499	510	508	557	513
Kenya	540	545	555	565	611	563
Lesotho	443	448	448	445	452	447
Malawi	422	427	435	433	447	433
Mauritius	519	564	587	620	640	584
Mozambique	526	525	531	530	538	530
Namibia	403	402	411	425	513	431
Seychelles	520	541	555	576	579	544
South Africa	442	445	454	491	597	486
Swaziland	506	511	511	513	541	517
Tanzania	484	511	529	528	560	522
Uganda	484	497	498	509	543	506
Zambia	414	425	436	434	466	435

Zanzibar	478	472	478	479	484	478
Mean	468	480	485	492	560	468

Source: Taylor 2009, 8.

Table 10 demonstrates South Africa's poor performance in relation to schools with substantially fewer economic resources through SACMEQ scores, a national exam taken to progress to the next year. While, in general, poverty is strongly associated with performance, it is not a guarantee for South Africa. Indeed, even though the educational disparity is starkly recognized in South Africa, it is still outperformed by Kenya and Mauritius; the lower four quintiles fall below the SACMEQ all-country means.

Ostensibly, all public school teachers are paid the same amount, regardless of location or class size. However, fee-schools are able to provide a "top-up" to their teachers. As one may expect, the more qualified teachers are then encouraged to work at wealthy fee-schools that may pay supplemental bonuses. Such is the case that overworked teachers in poorer schools may therefore be paid less, while better quality teachers are paid more with smaller class sizes. The supply and retention of qualified teachers needs to be of primary focus for South Africa. Encouraging more university students to join the profession and offering special incentives to teach at poorer schools could help ameliorate the education race gap. Additionally, increasing salaries and benefits, while providing more support, may encourage a larger number of professionals to become teachers, thereby improving the student retention rate.

Namibia, a neighboring country also subjected to apartheid, addressed teacher quality differently from South Africa and, while not performing well overall, does not show the same extreme stark disparity in educational attainment. While the new state

wanted to reject the hegemonic apartheid era, there was a serious push for educators to assist in the transformation of the education policy (Ahlstrom et al. 1999). Additionally, teacher education was a priority, and the liberation movement sent teachers abroad for their training (Dahlström 2002, 85). As stated by Lars Dahlström in her book *Post-Apartheid Teacher Education Reform in Namibia*, "many Namibians were educated on commission *for* the liberation movement not *by* the liberation movement" (2002, 86). Thus, along with Namibia's 1990 independence came the development of critical pedagogy and reconstructive ideologies of education. Teachers who understood the classroom dynamics clarified the purpose and goals of educational reform, thus it was clear and realistic upon implementation. A national three-year pre-service program to train teachers for grades 1 to 10 established quality education by the time schools were up and running (Dahlström 2002, 105). The case of Namibia reinforces the absolute requisite role that teachers play in implementing new reform and improving educational attainment for all.

Table 11: Educational Attainment for 25-29 years old, South Africa 2002-2010

Educational attainment	African			Colored			White		
	2002-2004	2005-2007	2008-2010	2002-2004	2005-2007	2008-2010	2002-2004	2005-2007	2008-2010
Less than grade 9	25.7	22.8	19.6	31.0	21.1	18.5	1.7	3.5	2.2
Grade 9	8.3	9.0	9.0	11.1	9.9	10.6	1.8	1.5	1.4
Grade 10	11.6	11.9	13.1	10.9	12.2	14.0	12.2	10.4	7.1
Grade 11	15.7	17.2	18.1	7.4	12.0	11.0	3.2	3.9	1.6
Grade 12	31.3	31.5	31.8	33.8	37.1	36.7	47.8	47.3	48.9
Post-Matric Diploma	5.1	5.9	6.9	4.3	5.9	7.2	15.3	15.3	20.4
University degree	2.3	1.7	1.5	1.6	1.8	2.0	18.0	18.1	18.3
At least grade 12	38.7	39.1	40.2	39.7	44.8	45.9	81.2	80.7	87.6
Beyond grade 12	7.4	7.6	8.3	5.9	7.8	9.2	33.3	33.4	38.8
% Grade 12s with University degree	5.8	4.4	3.6	4.1	4.1	4.3	22.2	22.4	20.9
Observations	18606	19464	19077	2552	3192	2324	1547	1080	893

Source: UNESCO Institute for Statistics. South Africa General Household Survey 2002-20010
Note: University degrees include degrees from traditional universities, comprehensive universities, and universities of technology

Failed Curriculum Reform: Outcomes-based Education and C2005

The rapid policy transformation from a race-based to all-inclusive school system was also met with a shift in curriculum reform. Because apartheid was so entrenched in the education system, the Education Ministry aimed to "cleanse" South Africa of all residual discriminatory effects, including those within the curriculum. This led to the enactment of *Curriculum 2005* (C2005) and, with it, the establishment of Outcomes Based Education (OBE) (UNESCO 2014). Launched in 1997 with great fanfare, C2005 aimed to make access and quality of education more equitable while also decentralizing oversight to the national education system to the South African provinces (Jansen 1998). The staggered implementation of OBE, which began shortly thereafter, was intended to replace the rote memorization approach to learning, standard during apartheid, with a more liberal, learner-centered pedagogy (Mouton et al. 2012, 1213). Within a year, curriculum developers, teachers, unions, and international business representatives collaborated in a frenzy to make OBE work. Driven by a commitment to social justice, the OBE curriculum prioritized round table discussions and expressions of opinions rather than literacy, writing, and mathematics. It was intended, in many ways, to be the pedagogical route out of apartheid education (Chisholm 2004, 3). The curriculum also consisted of two stages: compulsory General Education and Training (GET) from Grades 1 to 9, and Further Education Training (FET) from grades 10 to 12.

The OBE concept was relatively successful in privileged, usually white, school districts, where teachers were more qualified and enjoyed smaller classroom sizes and tended to have access to quality textbooks. Despite past standard rote-education structures, teachers and students were quickly able to acclimatize to the critical thinking

pedagogy that was central to OBE (Fiske and Ladd 2004). Wealthy and white-dominated schools were more able to adopt the new curriculum reform, given the strong governing structures and stable educational institutions established during apartheid. Conversely, poorer schools that tended to serve black students found the implementation of OBE to be expensive and nearly impossible. Teachers were not properly trained to adopt this new pedagogical style, and were expected to create their own learning programs and materials without much support (Mouton et al. 2012). Instead of providing basic training in literacy or mathematics in more effective ways than rote memorization, these subjects were simply ignored completely. While Rwanda tried to control and silence their tragic history in the classroom through a moratorium on history lessons, South Africa optimistically let the classroom be subsumed by it as a form of reconciliation. However, it failed to fully consider the legacy of disparity and inequality in this new reform. Both curricula extremes in response to ethnic tensions have proved profoundly ineffective.

A lack of realistic, substantial investment in human capital and physical resources—67 percent of schools lacked electricity, 83 percent lacked libraries, 34 percent lacked running water, and 21 percent lacked toilet facilities—failed to provide the basic structure OBE required to be successful (Mouton et al. 2012, 1213). The result was a severe fall in literacy rates and a deterioration of the education system. The results were completely opposite of what the Ministry of Education intended at the start of C2005.

The incongruity between the expectations of the reforms and classroom reality was partially due to the lack of assessment or analysis before the drafting and implementation of C2005. Even more startling was that the Ministry of Education was then tasked with the responsibility of monitoring the effectiveness of this policy. Given

the difficulty and overly detailed monitoring and evaluations required from teachers for assessments, the data were rarely collected (Mouton et al. 2012, 1211).

Many academics, particularly at the university level, were critical of the OBE and C2005 from the very start. Most famously, Rector and Vice Chancellor at the University of Western Cape Jonathan Jansen, a strong advocate for an improved education system, wrote "Why OBE Will Fail" (1998). He deemed the educational debate to be more philosophical and ideological than practical, and maintained that politicians were using revolutionary progress in education as a political tool rather than as a rational plan of what the schools needed (Jansen 1998). In his article, he offered ten major reasons why OBE will negatively impact South African schools:

1) The complex and contradictory language of the OBE curriculum policy
2) The unrealistic and overly idealistic relationship between curriculum and society
3) The policy being based on flawed assumptions about classroom structure and teacher quality
4) The policy's anti-democratic fixation of outcomes
5) The uneven, fragmented, and sometimes completely non-existent official support in schools to implement the policy
6) The policy's failure to require policy makers to identify the actual purpose of education
7) The increasing administrative expectations on already overburdened teachers
8) A fixation with outcomes and discrete competences, causing OBE to trivialize the important cross-curricular and interdisciplinary demands that build long-term transferrable skills
9) OBE's requirement of inputs that South Africa simply did not have, e.g., trained and retrained teachers, new forms of assessment, classroom organization that works in tandem with monitoring and assessment, parental support and involvement, etc.
10) The demand for an overly burdensome system of assessment (Jansen 1998).

By 2005, Jansen's dire predictions came to fruition. Unfortunately, the mission to spawn innovation through the OBE curriculum actually undermined the already fragile

school system. Moreover, it exacerbated the educational gap between white and black Africans. Wealthier, predominantly white schools were able to survive relatively unscathed by the initiative, while poorer, predominantly non-white schools without the resources needed to reform their curriculum structure, collapsed (Chisholm 2004, 4).

To address and improve the failed 1997 initiative, the Board developed the Revised National Curriculum Statement in 2000, which promoted a clearer and more coherent curriculum design while still focusing on societal justice (Chisholm 2004, 4). The committee that drafted and implemented this new educational policy recommended the promotion of smaller class sizes, a reintroduction of history, and clearer problem-solving lessons. Still, it did not fully address the difficulties in the monitoring and reviewing process. The OBE stayed in place.

Further complicating this morass was a political struggle among teacher unions. The South African Democratic Teachers' Union (SADTU) is the largest in terms of members, and plays a powerful role in South African society and government (Chisholm 2004, 7). As with most of these unions, SADTU was established during the anti-apartheid, pre-1994 struggle and defined itself as the opposition to racially based school systems. After 1994, many unqualified teachers were "catapulted" into leadership positions in the national education system and other bureaucratic posts (Chisholm 2004, 7). The unions had played a major role in the drafting, formulating, and implementing of C2005 beginning in 1997 and were insulted to change any policies of their own. Thus, while the unions generally supported the overall direction of the revision, they were generally reluctant to adopt specific steps for improvement. As dominant leaders in the educational realm, teacher unions were major actors in the role of C2005 and their

resistance most likely contributed to what kept the dysfunctional policy in place after it was proved ineffective.

Regarded as a failed social experiment, OBE and C2005 were quietly shelved by 2005, and a more standard education policy took their place. Still, the racially based educational attainment gap had widened during this time because of the C2005's tenure. While basic education is still compulsory, South Africa performs badly, with only about 71.2 percent of grade six students being literate and 58.6 percent numerate (Wilkinson 2013). Furthermore, according to a UNESCO report, about half of every cohort that enters the schooling system does not complete grade 12 (UNESCO 2011). Of the 1.1 million black South Africans who were born in 1994, fewer than half have progressed to take the final graduation examination. Of those who were able to take the exam, only 73.9 percent passed; the passing score is extraordinarily low at 30 percent (Dixon 2014). While the detriment of the education crisis on students is widely presumed to be particularly acute for poor black South Africans, failure remains hard to measure, as test results are not broken down by race or socioeconomic status. However, evidence such as the previous Table 10 (see: page 48) allows for substantial speculation.

The OBE policies made substandard education a norm in the majority of large South African public schools. While the new curriculum objectives were certainly detrimental, it does seem unrealistic to expect the nation to disengage successfully from the seemingly inescapable legacy of apartheid in only two decades. Still, South Africa can take clearer steps to solidify a stronger foundation and purpose for the education system to build upon so that, in the long run, the wounds from the apartheid can heal. South Africa can learn from Namibia, and focus on teacher development in whatever way

possible, to insure that teachers in poorer districts are capable of creating an educated next generation. The inequitable impact of apartheid produced generations of teachers with racially twisted understandings of society and status quo (Barbarin and Richter 2001), and South Africa's teachers need to be re-taught and re-introduced to the new societal realities in their country. Moreover, they need to be efficiently utilized and managed so that they can teach what they are qualified to teach. This is not the case in the situation left over from the C2005 initiative.

South Africa's newest initiative, the National Development Plan 2030 (NDP), provides a "holistic approach" to build economic advancement for the poorest Africans through improving education, infrastructure, rural development, healthcare, and social protection (South Africa Ministry of Education, 2012). Implemented in February 2013, the initiative aims to tackle the education crisis by bolstering teacher-training programs, increasing the number of students who achieve above 50 percent in literacy and mathematics by creating smaller class sizes, and raising retention rates to 90 percent with more practical curriculums. It plans on providing stronger incentives to ensure its effective implementation for teachers. Still, the psychological damage of apartheid that still imbues society needs to be confronted and addressed. Until then, the social and educational distance between differing racial groups will not improve, and the lives of disadvantaged South Africans will continue worsen. It is evident that simply spending on basic education, which is over 7 percent of government expenditure, will not provide textbooks and qualified graduates. Reasonable policies and curriculum that relate to the realities of South African society need to be implemented alongside teacher-training programs and development education programs. Moreover, substantial financial and

qualitative resources need to be targeted to poorer populations in order for any hope of academic, economic, and social equality.

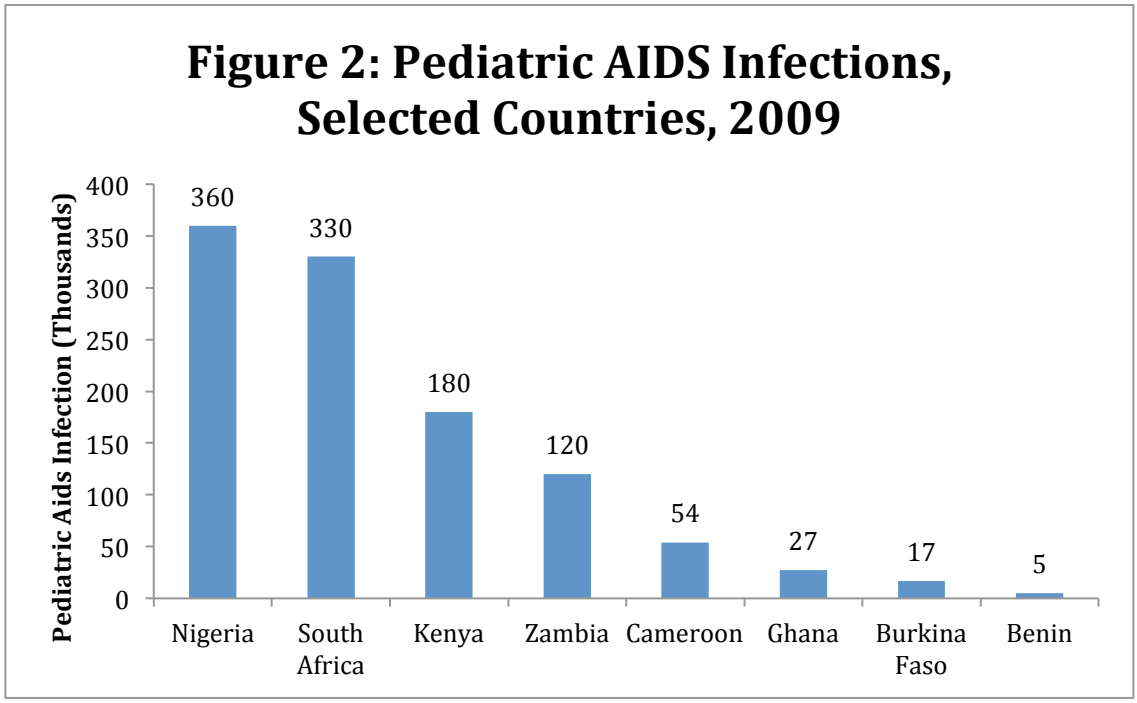
Additional Factors Hindering Educational Achievement

Youth unemployment has been increasing precipitously since 2008; at 63 percent in 2013, South Africa's youth unemployment rate was one of the highest in the world. This disconnection between curricula and the post-school sector is, no doubt, a major factor in this overall worsening unemployment rate (Wilkinson 2013). That wealthier, predominantly white schools perform better condemns non-whites to the lower income brackets in society (Spaull 2013, 8). Graduates entering an inflexible job market are deemed unqualified and quickly become disillusioned. While enrollment rates have improved considerably since post-apartheid, the average standard is poor: South Africa ranks 146 out of 148 in educational standards, according to the World Economic Forum's Global Competitiveness Report (2014-15, 13). Because the quality of education and the outcomes of schooling have so severely devolved, the value of a secondary education degree is atrophying. Education is not only poor, but the return on education is negligible.

The unemployment crisis reflects the racial biases found in the education system. While the proportion of non-white race groups has seen the largest increase in workforce participation, the skilled workforce for black Africans has only improved by three percent since 1994. The white workforce has increased by 19 percentage points in the same time span (UNESCO Institute for Statistics 2014). While the proportion of non-workers has increased across population groups, within the same groups there is clearly lower African employment growth than the white population groups. Similarly significant is the reality

that the black African group aged 25-34 years old has seen a decrease in skilled employment.

Efforts to keep children in school and succeeding later on are further complicated by the HIV/AIDS endemic (See Figure 2).



Source: The World Databank 2016

Despite 42 percent of patients diagnosed receiving the antiretroviral treatment, the disease has spread to over 6.3 million South Africans, about 20 percent of the population. The public health calamity most drastically impacts black Africans: 15 percent of black Africans are infected with HIV/AIDS while only 0.3 percent of whites are (Pennap et al. 2011, 24). This is further compounded with the correlation found between socioeconomic background and the likelihood of a person testing positive for HIV. Those with a higher level of education and employment are more likely to have accurate information about

the disease and have demonstrated a higher perception of risk (Pennap et al. 2011). Poorer areas are less likely to be tested, because testing units are not as available, and that can clearly be detrimental to the learning process. Here emerges a vicious circle: HIV/AIDS is correlated highly with high dropout rates; dropping out of school compromises a student from receiving effective HIV and sex education. Measures have been taken to account for the lack of sex education, such as Soul City, was a multi-media campaign to raise awareness for HIV/AIDS on television (UNAIDS 2004). The campaign, which encouraged positive behavioral change, reached 65 percent of rural people who may not have had this type of exposure previously.

There is a longstanding trend of disadvantaging black South Africans in education. That they are the predominant victims to the HIV/AIDS epidemic furthers the positive feedback loop, cornering the demographic into a worse situation in terms of future opportunity. Looking forward, South Africa's Education Ministry must take these considerations into account to achieve genuine equality in the educational and societal realm.

Case Study 3: Education for Ghana

Similar to South Africa, the Ghanaian government has demonstrated a historical commitment to education since independence. Indeed this relentless focus on sound policy geared towards improving education quality is part of what makes its deteriorating school system so puzzling. Across various regime changes, these noble ambitions have each eventually proven futile. While it has been relatively successful in progressing adolescents from primary to secondary level education, 46 percent of lower secondary age males and 60 percent of lower secondary age females are out of school. Moreover, a large proportion do not stay in school long enough to take the Senior Secondary Certificate Examination (SSCE).

Today, the Ministry of Education, represented by ten regional offices and 138 district offices, is responsible for national educational policy, technical and secondary vocational education, and for continuing the implementation of the educational policy. The country currently has over 12,000 primary schools, 5,000 junior secondary schools, 700 senior secondary schools, and nine universities (three private, six public), clearly improving education access. Additionally, school is compulsory for children between the ages of six and 15. Since its inception, the management of the Ghanaian educational system has improved immensely but is still marred by procedural bottlenecks. Unfortunately, the injection of enormous resources into the schools has not improved efficacy of these school systems. This section explains the history of education policy in Ghana to understand how Ghanaian education still suffers from the lack of adequate teachers, student absenteeism, and burdensome curriculum reliant on rote learning (UNESCO 2006). The failures of the school system pervade every level of schooling and

while students may be enrolling in secondary education, they are filling overcrowded, under-resourced classrooms. Moreover, the supposed "fee-free" public education involves a variety of costs and is widely corrupt. This section will challenge Ghana's successful performance in this thesis' regression model, noting that substantial work needs to be done to provide quality education for all students.

A History of Education

Early educational efforts date back to 1529, when Portuguese Castle Schools were founded and continued by Christian missionaries into pre-colonial Ghana (Owu-Ewie 2006, 76). In 1925, British colonial rule further solidified a formal education administration. Throughout, the access was predominantly limited to the privileged Ghanaian elite (Graham 1971).

In 1957, Ghana acted as inspiration for sub-Saharan Africa when it was the first country in the region to gain independence. Led by Kwame Nkrumah, the new democracy promoted education and the establishment of a socialist society. The claim was that the foremost goal of education was to produce an educated workforce that could propel Ghana into a middle-income level country (Akyeampong 2010). Nkrumah's inclusive idealism stood in clear contrast to the more exclusive colonial period, focusing on best serving the masses in terms of education, health, and infrastructure. In recognizing the urgency to build the nation's human resource capacity, Nkrumah's administration introduced the groundbreaking 1961 Education Act, which made basic education compulsory and ostensibly free. More secondary schools were established, and a focus on alleviating illiteracy was entrenched in public policy. However, this emphasis

on growth and improved access failed to account for an insufficient supply of teachers and did not expand outwards to Northern Ghana, the poorest region in the country.

Table 12 shows the resulting surge of enrollment rates, but does not illustrate the clash it had with quality, as classrooms were overfilled and educational quality deteriorated. The heavy investment in establishing schools and writing textbooks was not met with improvements in the quality of these schools or teachers. The critical lack of these resources was exacerbated by Nkrumah's profligate economic policies, which often consisted of poorly planned investments and unreliable projects that steered the Golden Coast's economy and infrastructure into turmoil (Akyeampong 2010).

Table 12: Expansion in Educational Enrollment Between 1951 and 1966

	1951		1966	
Type of School	**Number Schools**	**Number Students**	**Number Schools**	**Number Students**
Primary	1,083	153,360	8,144	1,137,495
Middle	539	66,179	2,277	267,434
Secondary	13	5,033	105	42,111
Teacher-training	22	1,916	83	15,144
Technical	5	622	11	4,956
University	2	208	3	4,291

Source: Akyeampong et al. 2007, 6

While the early education policies seemed promising, they did not guarantee that enrollment rates and quality would progress in tandem; it was unrealistic to expect access to meaningful education for all.

A military coup in 1966 ousted the socialist regime and sparked decades of political instability that further stalled educational progress. The new National Democratic Congress (NDC) neglected whatever momentum President Nkrumah had initiated for free and universal education. The military regime, combined with the country's economic recession, significantly derailed access to school. Drastic reduction of funding for all levels of education, combined with poor management and general corruption in schools, dashed any hope of developing a strong educational system (Akyeamopong 2010; MacBeth 2010). Further compounding the education crisis was an incredible "brain drain" of qualified teachers. As a result of poor remuneration and meager teaching conditions, over a third of the Ghanaian teaching population travelled east to Nigeria and even Libya between 1978 and 1984 (Obeng 2002, 31). Those that stayed in Ghana, therefore, were overburdened and demoralized. For decades, the education system continued to be hampered by inadequate learning materials, a chronic shortage of teachers, and overcrowded classrooms—a situation that prevented any effective intellectual development in Ghana. By 1983, the Ghanaian education system was in a state of crisis and widely recognized to be in dire need of reform (MacBeth 2010).

With the Reforms of 1987, the Ghanaian Education Ministry partnered with the World Bank to revamp the education system to be more inclusive, efficient, and effective. Some of the education policies were intended to implement superficial solutions, such as

reducing the number of years in school from 17years to 12, this being more appealing to rural families, and lowering the cost of the Common Entrance Exam for secondary education (MacBeth 2010).[16] The Reforms of 1987 also included a Whole School Development Program that decentralized the education structure and sought to promote:

- The quality of teaching and learning of literacy, numeracy, and problem-solving in primary schools
- Community participation in schools
- School-based, in-service teacher-training
- Participatory planning at school and district levels
- Improved efficiency in resource management (MacBeth 2010, 29).

These reforms yielded mixed results, likely because the system was both under- and over-financed. Money flowed towards expanding the number of schools and filling the classrooms with materials, but teacher-training was neglected and the shortage of teachers was still hindering true development. The "hardware" was easier to invest in and improve than the much-needed "software" that would ensure academic achievement. Because the government invested in infrastructure and access, not teacher-training or quality, students were placed at desks, but real educational opportunities were capped. While this thesis' prediction model shows that secondary education attainment improved during this time, it cannot ignore that the quality of public education in Ghana continues to fail its population.

A new democratic era was sparked in 1992, with relatively peaceful transitions between the NDC and the New Patriotic Party (NPP) (Little 2010). Education policy was

[16] The 1961 Education Act made elementary schools free and compulsory for six years of basic education, followed by another four years of elementary school, followed by another five years of secondary education, concluding with two years of college preparatory education. The burdensome and costly 17 years required of pre-university education was later reformed in 1987.

again revamped to require decentralizing the school systems to local districts and communities as well as to implement fee-free, compulsory schooling, reminiscent of Nkrumah's concept of basic education (Akyeampong 2010, 21).

Costs, Corruption, and Quality

While the curriculum has been nationalized, the education ministry is working to give administrative power to the local districts and school levels. The school-based management initiative means that families, teachers, and local authorities are responsible for the success of the public schools throughout Ghana. Each school has a Parent Teacher Association (PTA) that can choose how to distribute funds and whether they need to be supplemented. The effectiveness of a school-based management system relies not only on the participation and capabilities of the parents and communities, but also on the accountability of the participating actors to best benefit the students (Bogaert et al. 2012). However, this level of involvement varies across communities, depending on socioeconomic status and the community's prioritization of education. In poorer areas, the PTA contributions will likely be lower than in those wealthier regions. While deemed compulsory and "free," education is burdened with nominal costs of education that must be considered when looking at the factors impacting educational attainment in Ghana.

Without proper autonomy and transparency, decentralizing education has the potential lead to corruption and bribery. Indeed, according to Table 13 the 2015 Global Corruption Barometer evidenced that 24 percent of Ghanaians reported paying a bribe, giving a gift, or doing a favor for public schools at least once, making this one of the highest education-related bribery rates in the region (Transparency International 2015

38). The report claims that this corruption in education is particularly burdensome for the poor, who are twice as likely to be subject to the dysfunctional corruption. Moreover, corruption in these rural areas may misallocate funds, hindering the school and its students from having improving as intended.

Table 13: Bribery Rates in Public School System 2015

Country	Bribery Rate (%)	Country	Bribery Rate (%)
Regional Average	22		
Benin	26	**Mali**	18
Botswana	1	**Mauritius**	1
Burkina Faso	11	**Namibia**	7
Burundi	14	**Niger**	10
Cameroon	48	**Nigeria**	43
Cape Verde	2	**Senegal**	8
Cote d'Ivoire	34	**Sierra Leone**	41
Ghana	36	**South Africa**	7
Guinea	35	**Swaziland**	9
Kenya	37	**Tanzania**	25
Lesotho	5	**Togo**	26
Liberia	69	**Uganda**	38
Madagascar	16	**Zambia**	17
Malawi	13	**Zimbabwe**	22

Source: *People and Corruption: Africa Survey 2015,* 38.

The failure in Ghanaian public education has led to a shift in demand towards private schools for those who can afford it, despite the "fee-free" policies implemented by the government in 1992. Research shows that these low-cost private schools generally employ higher quality curricula than their public school counterparts; however, they cost about twice as much as the "fee-free" public schools (Tooley and Dixon 2006). This has

been true since "special primary schools" were established to benefit the Ghanaian elite: "In 1972, 21% of students from special primary schools appeared among the first 1,000 best performing candidates, compared with less than one percent of students from government schools" (Akyeampong 2010, 9). During the NPP regime, even more private institutions were set up from primary level to the university level, to further improve the education for the Ghanaian elite.

While still considered to be largely an urban phenomenon, private schools have been increasingly present in rural areas, as shown in Table 14:

Table 14: Type of School Attended by Household Poverty Status 2005/2006

Poverty status	Schooling Type			Enrolled in private school (%)
	No School	Public	Private	
Extremely Poor	36.4	58.5	5.09	8.0
Poor	20.1	69.0	10.9	13.6
Non-Poor	13.2	60.1	26.7	30.8
Total	22.6	60.5	16.9	21.8

Source: Tooley and Dixon 2009.
Note: For children aged 6 to 17.

That private schools currently account for over 20 percent of all primary enrollment rates raises the issue of affordability and equity. Even though private schools claim to be "low fee," households that send children to private schools incur significantly higher costs than do those who remain at the public schools. Private schools work hard to

attract students from all socioeconomic levels, with enticements like the price of enrollment being reduced for every additional child enrolled (Akaguri 2013).

Meanwhile, public schools do little to induce demand, are generally perceived as of poorer quality, and still incur some costs. While public education is deemed "free," there are supplementary costs such as uniforms, school supplies, and ad hoc infrastructure requirements that families are expected to pay (Bogaert et al 2012, 291). Table 15 compares the average total cost of private schools to public schools for an individual child.

Table 15: Household Unit Costs per Child for Public and Private Schools (USD)

Item	Public Cost	Private Cost
Transport to and from School	0	5.73
Food at School	18.97	28.39
Tuition Fees	0	9.33
Parents' Contributions (PTA)	1.3	0.99
Examination Fees	0.76	1.77
Extra Classes	0	7.66
School Uniforms	10.02	8.33
Stationary / Textbooks / Pens / etc.	6.05	7.0
Average Total Cost :	32.74	62.06

Source: Akyeampong 2010.

On average, the total cost of private school is twice that of public school. Table 15 shows the variation across socioeconomic quintiles, emphasizing the income elasticity of poor households. For poor households to opt for private education, no matter how "low-

fee," is a huge sacrifice. Therefore, the weak accountability in public schools and the sense of purpose exhibited by low-fee private schools makes private education that much more attractive, even for the poor. For families who are willing to sacrifice private education, they may deem the difference in price reasonable in comparison to the difference in quality. Given the significance of the final examination for graduation, demand for private schools will continue to rise. If the government does not improve the education system as it stands, there is an opportunity to support the disadvantaged poor to attend these higher quality private schools.

Table 16: Mean Household Income by Quintile

Quintile	First Quintile (Lowest Income)	Second Quintile	Third Quintile	Fourth Quintile	Fifth Quintile (Highest Income)
Mean	208	355	518	875	1,909
Median	222	360	540	900	1575
Minimum	45	273	432	540	900
Maximum	270	432	630	1080	4680
Average proportion income on public education	16%	9.2%	6%	4%	1.7%
Average proportion income on private education	30%	17.5%	12%	7%	3%

Source: Akyeampong 2010.

In addition to these fiscal costs, there are "cultural costs" found in public schools that fail to accommodate for religious identity, according to a study by Dei and Opini (2007). This study found that Muslim parents may keep their children out of school to avoid religious indoctrination, considering the cultural cost too high. Again, private religious schools for a variety of students may meet the demand for maintaining traditional values. This question of duality regarding purpose and function of schools can often be better specified in private schools, rather than national public schools (MacBeth 2010, 11).

As cost and quality are so interwoven, it is understandable that the more expensive urban schools would be of better quality. A recent study by Ampiah and Yeboah (2009) explored the influences that impact education enrollment and dropouts in Northern Ghana, where the educational crisis is particularly acute. The issues range from untrained and undercompensated teachers to the socioeconomic backgrounds of the populations. Children from disadvantaged backgrounds, regardless of country context, are usually the most vulnerable to dropping out (Nesselrodt and Alger 2005; Ampiah and Yeboah 2009). The Northern districts tend to be more deprived than Southern regions because they are largely agricultural; the majority of students there (82 percent) were found to drop out before junior secondary (Ampiah and Yeboah 2009, 224). The study also found that students in the Norther were almost one and a half times more likely to be absent from school, because of the unpredictable scheduling of their lives as well as because of their farming and household responsibilities. The findings reaffirm factors that already were considered known to hamper educational success and retention.

In Accra, Ghana's capital, there is a stronger economic base and relatively more social services like quality education and healthcare accessibility. In rural areas, particularly in the impoverished northern regions, the population is more scattered. If over 70 percent of the economy in these rural regions is informal agriculture, and the remaining 30 percent is considered to be economically inactive, education is perceived as less of a prerequisite for livelihood (MacBeth 2010, 13). Moreover, child labor, poverty, distance from school, and poor attendance all have further negative impacts on educational attainment. An inapplicable national curriculum only exacerbates this reality. Still, little has been successfully done on a national scale to address these particularly vulnerable communities. Rather, corruption and school-based management have only worsened these already detrimental factors overall.

According to the prediction model in Chapter 2, Ghana's education system appears surprisingly successful because of its high number of years children spend in school. This ostensibly positive performance may be a result of its relatively long duration of compulsory education. Despite this performance, this Chapter showed the urban-rural differences to be consistently biased against the poorer, rural populations. Not only does schooling in the rural regions need to be more accessible for Nkrumah's vision of Ghana of a developed and egalitarian state to be achieved, but the country must improve the intangible "software" such as teacher quality and curricula instead of merely building more schools. Above all, it must work harder to combat the corruption imbued in every level of the education system. Without improving corruption, effective decentralization of the school system seems near impossible.

Case Study 4: Education for Botswana

Landlocked, resource-rich, and politically stable, Botswana stands in stark contrast to the majority of sub-Saharan Africa as a consistent over-performer in educational attainment. Home to approximately 2 million people—33 percent of whom are between the ages of ten and 24 years old—Botswana is slowly transforming itself into a middle-income country (Chuhan-Pole and Manka 2011, 82). This section acknowledges some factors that allow Botswana to be an "exception to the rule" in terms of its governance and its education, compared to its regional neighbors. Recognizing the successes its education system has achieved, this thesis further explores the role of nationalized curricula in impacting the urban-rural dynamic in Botswana and the unemployment crisis.

A Series of Fortunate Events

Botswana's success defied the plethora of negative predictions. At the advent of independence, in 1966, Botswana was one of the poorest countries in the world, severely lacking infrastructure and assets. There were two secondary schools, and the overall quality of education was burdened with large class sizes and a high failure rate (Acemoglu et al. 2001, 17). However, independence did not halt the evolution of Botswana's political institutions, but rather allowed the country, with an initially grim economic and educational outlook, to establish a reliable democracy that emphasized investment in education, healthcare and infrastructure (Leith 2005, 54). Relatively untouched by corruption and political instability that roils so many African nations, Botswana outpaced newly industrialized "Asian Tigers" such as Korea, Thailand, and

Singapore at 7 percent per annum (Leith 2005, 4). Manufacturing exports grew over 16 percent per year from 1975 to 1999, education enrollment rates skyrocketed from 2 percent at independence to about 87.3 percent by 2013, and one of the world's poorest countries emerged as a model success story for sub-Saharan Africa (Lewin 2009; UNICEF 2013).

Table 17: Botswana Education Enrollment (in thousands)

Year	1965	1970	1975	1980	1985	1990	1995	2001
Primary	66.1	83	116	172	224	284	319	327.6
Secondary	1.3	3.9	12.1	18.3	32.2	56.9	105	151.2*
University	0.1	0.14	0.47	0.93	1.77	3.68	5.5	11.2*

Sources: Leith 2005, 14.
Note: * refers to 2000

The combination of a relatively intact pre-colonial culture and a tradition of honest governance offered a foundation to soundly rebuild the country through orthodox economic and social policies, a privilege not granted to most African countries (Acemoglu et al., 2002). Alongside good governance, a significant portion of this country's transformation must be accredited to its natural resources. While the presence of mineral wealth does not guarantee broader economic success, Botswana's established redistributive institutions preceded the introduction of resources, thus allowing the

proceeds of Botswana's abundant diamond mines to be evenly distributed throughout the country (Weldon and Russell 2014).[17] Particularly noteworthy was President Seretse Khama's decision to grant sub-soil mining rights to the state to avoid any tribal contestation for revenue. The country's prudent monetary and fiscal policies have mitigated the potentially detrimental implications of the "resource curse" and have been heavily reinvested to score tremendous gains in the development of its education and healthcare sectors (Saraaf and Jiwanji 2001, 17). While diamonds fueled the bulk of economic growth, Botswana is bolstered by institutional strength, explaining its relative success in educational attainment and policy.

Educational Policy

The longstanding cultural values surrounding education withstood colonization, and a historical precedence of valuing education influenced the nascent democracy (Major and Tiro 2012, 64). A smooth amalgamation of traditional culture and "formal"

[17] The idea of the "resource curse" emerged in the late 20th century and argues that resource-rich countries, specifically non-renewable resources, tend to have surprisingly poor economic growth and worse development outcomes than countries with fewer resources (Sachs and Warner 2001; Auty 2001). The logic follows that, with the influx of natural resource revenue, countries may deviate from their other industries and become fully dependent on nonrenewable resources. Since virtually every sub-Saharan African country is either producing natural resources or searching for natural resources, this theory has been used to describe the regions lack of economic development (Hertog 2010). While the evidence accumulates, it is pertinent to recognize correlation does not necessarily imply causation. Many of these underperforming resource-abundant regions are ridden with complex barriers to development, including avaricious leadership and difficulties in establishing a unified nation after colonization and building any effective infrastructure (Hertog 2010). However, dozens of countries, Botswana included, have been able to escape this "paradox of plenty" to spur economic growth.

education, as well as robust and well-implemented policy, helped Botswana achieve its impressive surge in enrollment rates.

Three major reform initiatives shaped educational policy in Botswana: the 1977 Education for Kagisano (Education for Social Harmony), the 1994 Revised National Policy on Education (RNPE), and the Vision 2016. Education for Kagisano—rooted in the four national principles of democracy, development, self-reliance, and unity—sought to increase the country's human capital by increasing educational opportunity for the first nine years of basic education (UNESCO 2006). The RNPE built upon the former policy, both categorizing education as a fundamental human right and recognizing it as key for transforming the agriculture-based Botswana into an industrial economy. The policy was a significant milestone, providing a sound framework for educational planning and the provision of education. Its main objectives are:

- To increase access, equity, and educational standards at all levels
- To improve and maintain quality at all levels
- To provide lifelong education to all sections of the population
- To improve general education so as to prepare students more effectively for life, citizenship and the world of work
- To make training more responsive to the changing needs of economic development by emphasizing science and technology
- To enhance the status and performance of the teaching profession
- To ensure effective management of the education system and maximize community and parental development by improving partnerships
- To increase cost effectiveness and cost sharing in the financing of education and training
- To assume control of the examination mechanism that is more effective in order to ensure that the broad objectives of the curriculum are realized (Government of Botswana).

The Education for Kagisano and Revised National Policy on Education policies culminated in the Vision 2016 Initiative, a national manifesto to celebrate fifty years of independence, which accentuates the respect of human rights and tolerance for all religions, ages, nationalities, political opinions, and genders through its seven pillars.[18]

Botswana's education system is comprised of seven years of primary education, three years of junior secondary, and two years of senior secondary. The first ten years are genuinely free and compulsory, with the first four being taught in Setswana, and the latter six in English. This dual language approach allows students to feel comfortable in the curricula in a more familiar Setswana when introduced to English. Primary school receives substantial attention; the student-teacher ratio is approximately 13:1. The progression from primary to secondary school previously was contingent on students passing the Primary School Leaving Examination (PSLE), a conditionality that recently was removed, although the exam is still administered. PSLE results can be found in Table 18.[19] In 2015, almost 70 percent of candidates obtained a Grade C or better, an overall increase in the performance of primary schools. Everyone is eligible to take this exam.

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[18] The seven pillars of the Vision 2016 initiative are: an educated, informed nation; a united and proud nation; a prosperous, productive, and innovative nation; a compassionate, just, and caring nation; a safe and secure nation; an open, democratic, and accountable nation; and a moral and tolerant nation (The Government of Botswana and Botswana Vision 2016 Council 2010).

[19] The Primary School Leaving Exam is an annual examination that comprises seven mandatory subjects, including: English language writing, Setswana language, mathematics, agriculture, religious and moral education, science, and a social studies section. It is a national exam distributed by the Botswana Examinations Council and the Ministry of Education and Skills Development. All segments of the exam are in English except for the Setswana language section (Botswana Examinations Council Report 2015).

The government strives to make primary education accessible and affordable at the primary level so the option for secondary at the end of compulsory education is available to all who are eligible. Their aims were met: from 1991 to 1997, the number of students eligible to move on to lower secondary increased from 65 percent to 98 percent (UNESCO 2010, 14). Students must pass the junior secondary examination to progress to upper secondary school or choose to enter into the workforce. Upper secondary school, usually beginning around age 15, lasts for two years and has a lower student-teacher ratio of 24:1, and follows a senior secondary examination, which acts as a prerequisite for tertiary education. An alternative to the workforce is vocational education, which becomes available after junior secondary education and specializes specifically in teaching and nursing.

Table 18: Number of Students Who Took the PSLE Exam

Subject	2012	2013	2014	2015
Setswana	42,863	43,086	42,160	41,905
English	43,583	43,775	42,797	42,553
Mathematics	43,583	43,775	42,797	42,553
Science	43,583	43,775	42,797	42,553
Social Studies	43,583	43,775	42,797	42,553
Agriculture	43,583	43,775	42,795	42,553
Religious and Moral Education	43,538	43,723	42,754	42,508
Total Candidature	43,583	43,775	42,797	42,553

Source: Botswana 2015 PSLE Results Summary.

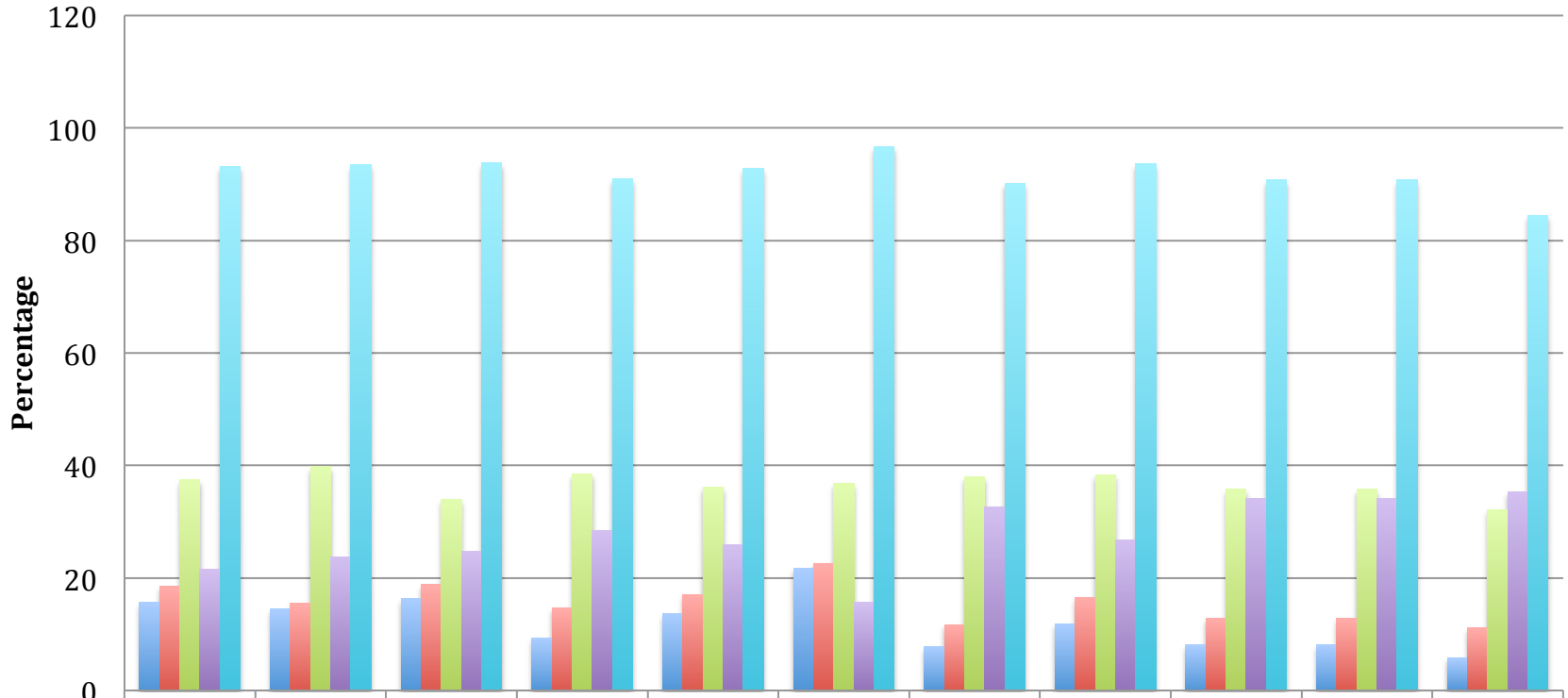
The examinations are made public and are used for the Education Ministry to constantly assess pedagogical methods and improve the quality of education. Already spending about 30 percent of the national budget on education, the Botswana government strives to have a "system of quality education that is liable to adapt to the changing needs of the country as a world around us" through vocational school accessibility and public-private educational partnerships (UNESCO 2010, 2). Still, there is a need to diversify the curricula to better prepare students to enter the job market without a college degree. Recognizing this need, the Botswana Education Ministry will be launching an initiative to teach basic computer skills to its secondary education students (Davis et al. 2015). Vision 2016's primary objectives mirror the 1994 Revised National Policy on Education (RNPE), which continues to guide the education sector until 2020 (Tabulawa 2009, 88). This policy guides the Ministry of Education in terms of curriculum reform and ongoing improvements until 2019, when it will be revamped again.

Challenges for Botswana Moving Forward

The tendency of multilateral organizations and governments to prize Botswana as a golden standard for education in sub-Saharan Africa can blind donors and policymakers from the challenges actually confronting the country. Despite the success of the country's nationalized education system, it currently faces steep barriers in curricula, employment opportunities, and HIV/AIDS, all of which must be overcome. First, a nationalized curriculum, although a potential means to foster unity throughout a nation, may benefit specific regions more than others, discriminating against rural populations. The country's nationalized school curriculum offers prescribed syllabi that leave little room for

relativity or contextualization and may fail to consider the prevalent socio-economic, climatic, and cultural idiosyncrasies across regions (Pansiri 2011). The challenges with this are evidenced both by PSLE results, as evidenced in Figure 3, and seasonal absenteeism, shown in Table 19. A recent study found a correlation that implies children in rural regions are more likely to drop out in certain seasons, when agricultural work is an obligation (Pansiri 2011, 116).

Figure 3: Proportion of Candidates Awarded Grade A to D by District and Town Council



	Central	Lobatse	Jawneng	Southern	Kwenen g	South East	North West	Kgatleng	Kgalagad i	Chobe	North East
A	15.66	14.47	16.3	9.33	13.64	21.72	7.85	11.88	8.07	8.07	5.78
B	18.62	15.48	18.82	14.69	17.06	22.64	11.71	16.6	12.84	12.84	11.18
C	37.45	39.8	33.95	38.51	36.18	36.78	38.03	38.39	35.73	35.73	32.16
D	21.51	23.73	24.71	28.47	25.87	15.62	32.63	26.72	34.17	34.17	35.3
A-D	93.24	93.48	93.78	91	92.75	96.76	90.22	93.59	90.81	90.81	84.42

Table 19: Primary School Leaving Examinations: Percentage of Candidates Awarded Pass Grades A and B by District, 2004 - 2009

District	Locality	Local Language	Economy	2004	2005	2006	2007	2008	2009
Kgalagadi	Remote, South Africa border	Afrikans	Traditional subsistence farming	25.1	28.4	27.8	22.2	19.4	17.3
Francistown	Urban, Capital City	English	Working class	60.7	55.8	60.1	47.5	25.2	50.3
Tshekedi	Rural, center of country	Setswana	Mixed farming and working; working class	31.8	29.6	30.9	21.4	25.1	24.5
Gaborone	Urban, capital city	English	Working class	59.5	55.2	58.6	51.5	52.5	49.8
North West	Rural, Zambia border	Sesubiya	Traditional farming and fishing	31.8	29.6	30.9	21.4	25.1	24.5
Gantsi	Remote, Namibia border	Sesarwa	Traditional farming and hunting / gathering	26.2	25.9	23.0	19.6	16.3	17.8

Source: Pansiri 2011, 75.

The seasonal changes that contribute to absenteeism could be addressed if Botswana's education policies were made on a more localized basis. Some policies however, have proven quite beneficial to the country as a whole. For instance, sinc 1996, the Ministry of Education has attempted to revamp curricula to focus on the environment, HIV/AIDS awareness, and emerging issues (UNAIDS 2013). While proposal, if adequately implemented, might have been sound, some teachers did nc receive training in these topics and therefore did not know how to incorporate them the curriculum.

Second, there is a large, unemployed, but highly educated population in the country because the stagnant labor markets that secondary education graduates ent does not offer enough jobs commensurate with the education system. Botswana fac twofold challenge: transforming an economy and transforming its workforce. The economic strength of Botswana rests overwhelmingly on diamonds, with mineral r representing approximately one-third of the country's GDP over the past decade. Although Botswana has avoided the pitfalls of the resource curse, being ranked 38 the 2007 Transparency International Corruption Perceptions Index, this lopsided economy is not sustainable (Hanson 2008). Attempting to diversify its economy, th Botswana government has focused on costly, export-oriented manufacturing, as we international investments and tourism, but suffers from a comparative disadvantage its close proximity to the economic powerhouse of South Africa. The lack of econc diversification is further hindered by its falling agricultural sector, which began to decrease as a portion of GDP with the introduction of diamond mining.

A culture of entrepreneurship and small- and medium-sized businesses could prove inspiring to accelerate diversification efforts, and could expand with vocational training programs, but this transformation may take too long. Since mining and governments so heavily dominate Botswana's economy, a 2007 International Monetary Fund (IMF) report recommended a bureaucratic reduction combined with labor market reform in order to attract foreign investors (International Monetary Fund 2007, 32). Ideally, these two recommendations would address the slow economic diversification and unemployment to transform the economy, but fail to address the unavoidable steep economic barriers facing the country from success—specifically that it is a country rife with HIV/AIDS, that relies on South Africa for many of its imported goods (Hanson 2008).

The Botswana government does recognize its eroding international competitiveness, and has responded by emphatically spending on education. Education is deemed synonymous with success in the Botswana, but the surplus of skilled and educated workers has not been met with large labor market demand. To qualify for an entry-level job requires higher qualifications than secondary and tertiary education can provide. Students, therefore, face "the predicament of being overqualified for some jobs and underqualified for others" (Hanson 2008). Students do not want to take the low-skill positions, such as those in construction and domestic help—a reality that has led to an influx of Zimbabwean migrants coming to Botswana searching for employment. Nevertheless, there is an evident lag time in response to the "white collar" job creation, leaving Botswana graduates unemployed.

Additionally, the country has been tragically burdened with having the third highest HIV/AIDS prevalence in the world, with 21.9 percent of adults suffering from the disease (UNAIDS 2013). While it is a huge undertaking for the government to sustain prevention and treatment programs to fight it, the country provides universal, free antiretroviral treatment for those living with HIV, significantly decreasing new infections and AIDS-related deaths. Botswana's progress is impressive, but its prevention efforts need to be scaled up to support the most vulnerable populations—specifically young people, female sex workers, and homosexual men. Still, funding proves to be one of Botswana's greatest challenges in responding to the HIV epidemic. As the country joins the ranks of middle-income countries, international funding has diminished, since now donors redirect their support to low-income countries. This decrease in funding, combined with a relatively stagnant economy, may imply that Botswana cannot afford to offer its tremendous welfare in the future. Providing and improving free welfare is dependent on extensive international funding and the mining industry, both of which are not sustainable. Botswana must establish a stronger, more diversified and entrepreneurial economy for its educated populations if it hopes to continue providing these much-needed welfare programs and free services.

Chapter 4: Opportunities for Reform

Despite an international commitment toward increasing universal enrollment rates in sub-Saharan Africa, debilitating problems stymie progress—as outlined in the above case studies. While these problems are distinct to each country, they can be representative of larger issues facing educational advancement throughout the continent.

In order to move forward, future policy must acknowledge the urban-rural reality. Otherwise, policy makers are at risk of the pitfall of wishful thinking, not to mention political rhetoric. Students in rural communities are less likely to progress to secondary education as they suffer from overcrowded, underfunded classrooms and often face pressure to commit to agricultural and domestic work. More qualified teachers are often discouraged from working in rural areas, and disenchanted parents may be unwilling to invest their children's time in school when there is little obvious reward. Yet it is in these rural areas that the majority of the sub-Saharan African population lives. Decent education for all cannot be accomplished without allowing for the specific idiosyncrasies found in each country's rural populations. In order to accomplish more equitable and accessible educational opportunities, this thesis recommends that education policy in the region focus on:

1. Reallocating funds to be more applicable in the education infrastructure
2. Improving teacher-training programs and offering teachers incentives to work in disadvantaged areas
3. Creating a flexible, relevant curriculum
4. Establishing cash transfer programs to encourage households to send their children to school
5. Improving long-term improvements in employment opportunities to motivate families and individuals to invest in education.

While these institutional improvements will not address every issue that hampers success in education, such as the ubiquitous spread of HIV/AIDS, they promote a realistic vision of what countries can work toward in order to provide an equitable educational experience for all of its citizens.

Financing Education

Sub-Saharan African countries currently allocate about 18.3 percent of their public resources to the education sector (UNESCO 2011), but as this thesis shows, the amount of spending does not necessarily correlate with success. The robust growth in education spending must be met with appropriate policy and curricular reform to ensure equitable quantitative and qualitative improvements. This can begin by focusing expenditure on developing the primary school systems, rather than by focusing on the tertiary education system.

Currently, expenditure per tertiary student is at least ten times greater than for primary students. Primary school, on the other hand, has seen such a huge surge in enrollment that the expenditure per student has decreased relative to GDP in most countries in the region. The lack of funding degrades the quality of the education received. Table 20 shows the drop in student-teacher ratio once a student gets to secondary and upper secondary education, one determinant of learning quality. Poor education at the primary school bars students from progressing onto secondary school and can deny them the educational opportunities to which the government states they are entitled. While higher levels of education are usually matched with higher spending in general, the inequity of resource allocation that bars majorities from entering upper levels of education must be addressed (UNESCO 2011). Until the governments in sub-Saharan

Africa reallocate funding to benefit the retention rates of primary education, only a limited proportion of students will enjoy the large benefits from public resources—widening the educational achievement gaps.

Table 20: Student-Teacher Ratio (Headcount Basis)

Country	Primary	Lower Secondary	Upper Secondary
Angola (2011)	42.54306	33.27119	20.50581
Benin (2014)	45.92349	11.01843	7.69833
Botswana (2013)	22.61822	..	..
Burkina Faso (2014; 2009; 2009)	44.49899	30.02287	16.0522
Burundi (2014)	43.65376	42.50685	26.20684
Cameroon (2014; 2013)	44.19526	19.73618	19.26365
Cape Verde (2014)	22.60472	16.60772	15.28372
Central African Republic (2012)	80.11576	..	..
Chad (2013; 2012)	62.42763	41.55428	17.82284
Eritrea (2013)	40.28249	39.8274	36.77113
Ethiopia (2014; 2012; 2012)	64.27288	43.34925	20.99876
Gambia (2014)	36.83534	27.70799	..
Ghana (2015; 2014; 2015)	31.25587	15.3958	19.50429
Guinea (2014; 2011; 2010)	44.64329	37.0465	26.66493
Guinea-Bissau (2010)	51.92515	..	..
Kenya (2012)	56.5747	56.57381	32.30515
Lesotho (2014)	32.77944	..	..
Liberia (2014)	26.49841	13.75804	17.2592
Malawi (2014)	61.38905	..	..
Mali (2014)	42.47449	29.54108	10.83247
Mozambique (2014; 2013)	54.48858	33.89333	23.91423
Namibia (2010)	29.77842	..	..
Rwanda (2013; 2009;2009)	59.81633	22.59902	22.61891
Senegal (2014; 2008; 2004)	31.58513	34.78689	25.1471
Seychelles (2014; 2002)	12.55271	..	13.07451
Sierra Leone (2013)	34.83163	19.83891	22.50521
Somalia (2007)	35.51919	17.89063	20.68412
South Africa (2013)	32.02921	..	..
Sudan (pre-secession) (2009)	38.37542	28.01127	17.37581
Swaziland (2013; 2012; 2003)	28.09674	..	12.55396
Togo (2014; 2011; 2011)	41.13664	33.93276	16.20854
Uganda (2013; 2006; 2006)	45.59109	19.01322	18.01159
Zambia (2013)	47.94526	47.94506	…

Source: UNESCO Institute of Statistics Database 2016.
Note: ".." means the data is unavailable.

Because funding at these lower levels of schooling often involves decentralization, sound infrastructure to monitor corruption should be in place. In the case of Ghana, where corruption is accepted as a norm in many rural areas, it is difficult to monitor the school districts and confirm proper allocation. If financing the rural schools instead focuses on tangible aspects, such as teachers and classroom materials, it may alleviate some corruption along with more monitoring of implementation.

One helpful example of a country with good infrastructure is Botswana. In its monitoring of corruption over the past 50 years, Botswana has exposed corruption scandals and dissuaded others through effective punishments via the Corruption and Economic Crime Act of 1994. In fact, in the public schools, this fight against corruption has manifested itself into a popular campaign with a cartoon superhero in the form of a cartoon cow named *Rre Boammaruri* ("Mr. Honesty"), whose purpose is to instill ethical values at the primary school age about how to avoid corruption (Director on Corruption and Economic Crime) (see Appendix: Figure 4).

Responsibly financing and monitoring the school systems at the primary level is critical for establishing a quality education system. However, a budget must also focus on sustainable benefits for the students and classrooms. Instead of investing in the One Laptop per Child ed-tech initiative, Rwanda could have reallocated that money into its teacher-training programs or textbooks. This reform relies on governments consciously investing in long-term programs, such as teacher-training, instead of flashy superficial, publicity-seeking initiatives that are intended to be more attractive to international aid organizations and multilateral donors.

Teacher-Training Programs

Providing more resources to more classrooms will not be impactful if it is not met with an increase in qualified, trained teachers. The dearth of adequately trained teachers, as seen in Table 21, is almost always more prescient at the primary level than at higher levels of schooling. Moreover, the issue of qualification proves particularly acute in rural areas, where overcrowded classrooms and inadequate resources make it is substantially less appealing to teach. A 2010 review of unqualified primary teachers in Tanzania, Malawi, and Nigeria, found the increasing demand for primary education has led to the hiring of unqualified teachers (Kruijer 2010) —in fact, the increase of unqualified, unenthused teachers has undermined the teaching profession as a whole in these countries. Moreover, these underprepared teachers are likely to be detrimental to their student's overall learning experience. Because qualified teachers tend to be largely concentrated in urban areas, the atmosphere of teacher absenteeism and tardiness in unprepared teachers further entrenches the urban-rural educational disparity (Nordstrum 2015, 26).

The urban-rural gap in teacher quality calls for an increase in the number of qualified teachers all around, but also emphasizes the need to encourage teachers to work in remote areas. Thus, the opportunity to invest more heavily in teacher-training programs is important. Currently, teacher-training institutions frequently lack the capacity to provide future teachers with "high-quality" training, making them less capable of implementing good learning practices and instead more likely to have a poor attitude about their profession (Nordstrum, 2015).

Table 21: Percent of Teachers Who Are Adequately Trained

Country	Primary Education	Lower Secondary	Upper Secondary
Angola (2011)	47.48642	..	..
Benin (2014)	67.59375	..	..
Botswana (2013)	98.63651	100	100
Burkina Faso (2013; 2009)	85.58639	93.82239	58.40979
Burundi (2014)	92.15134	..	100
Cameroon (2012; 2013)	78.77751	100	100
Cape Verde (2014)	96.02024	100	100
Central African Republic (2012)	57.91702	..	..
Chad (2013)	64.98018	..	..
Congo (2012)	80.31706	58.75	..
Côte d'Ivoire (2012)	84.94438	..	..
Democratic Republic Congo (2014)	94.62353	..	..
Eritrea (2014; 2013)	79.86175	..	..
Ethiopia (2013; 2012)	95	100	100
Gambia (2014)	84.1104	..	..
Ghana (2015)	54.69452	81.71151	82.08955
Guinea (2014; 2008)	75.00395	68.47826	62.5
Guinea-Bissau (2010)	38.9313	..	..
Kenya (2009)	96.80731	..	..
Lesotho (2014)	75.7858	100	..
Liberia (2014)	56.3885	..	..
Madagascar (2014)	16.66275	..	..
Malawi (2013)	90.80983	100	100
Mali (2011)	52.42385	..	..
Mauritius (2014)	100	87.39407	90.86294
Mozambique (2014)	89.95685	43.77593	36.73469
Namibia (2010)	96.38881	..	..
Rwanda (2013)	95.20406	..	..
Sao Tome and Principe (2012)	34.35115	..	..
Senegal (2014)	69.96822	26.89538	48.8498
Seychelles (2014)	23.64672	92.85714	..
Sierra Leone (2013)	57.11606	..	..
Swaziland (2013)	79.14659	64.18871	49.59184
Togo (2013)	76.06691	58.33108	42.23539
Zambia (2012)	92.65586	100	100
Zimbabwe (2012)	88.15413	..	..

Source: UNESCO Institute of Statistics 2016.
Note: ".." means the data is unavailable.

Table 22: Teacher Pay By Level of Schooling Expressed as a Proportion of GDP per Capita

Country	Primary	Lower Secondary	Upper Secondary
Angola (2003)	1.5	…	…
Benin (2010)	5.0	5.5	9.9
Burkina Faso (2007)	5.9	8.8	9.6
Cameroon (2011)	2.7	2.5	6.9
Cape Verde (2009)	2.4	2.7	2.9
CAR (2008)	3.3	6.5	6.7
Chad (2003)	5.4	8.8	9.8
Congo (2007)	0.9	2.0	2.5
Cote d d'Ivoire (2007)	4.9	8.8	9.4
DRC (2005)	3.9	2.4	2.4
Eritrea (2003)	7.7	…	…
Gambia (2009)	2.5	2.8	3.0
Ghana (2007)	4.7	4.7	4.8
Guinea (2005)	1.7	2.9	2.9
Guinea-Bissau (2010)	2.3	3.4	3.4
Kenya (2004)	5.3	7.6	7.6
Lesotho (2004)	5.0	10.	10.4
Liberia (2008)	3.0	3.1	3.3
Madagascar (2008)	2.3	5.1	8.1
Malawi (2008)	6.3	11.6	11.6
Mali (2008)	4.2	5.6	6.6
Mozambique (2003)	4.0	13.1	32.9
Niger (2008)	6.6	7.4	8.6
Nigeria (2003)	4.9	…	…
Rwanda (2008)	2.6	6.4	7.3
Sao Tome & Principe (2010)	1.5	2.9	2.9
Senegal (2004)	4.7	5.5	6.6
Seychelles (2010)	1.7	…	3.6
Sierra Leone (2010)	2.4	3.4	5.9
Sudan (2009)	2.2	2.6	2.6
Togo (2011)	4.5	8.1	8.6
Uganda (2011)	3.3	4.1	5.8
Zambia (2007)	1.5	…	…
Zimbabwe (2003)	6.1	…	…

Source: UNESCO Institute for Statistics 2011.
Note: ".." means the data is unavailable.

Another issue with teacher-training programs is the curriculum. In many countries, the content of these programs is passive, theoretical, and lecture based, often failing to relate to the actual classroom setting. Lee Nordstrum conducted a study (2015) that focused on the influence of teacher-training programs, given the rapid increase in enrollment rates in Ethiopia and Tanzania between 2000 and 2010. Ethiopia met the new education demands by hiring unqualified teachers, while Tanzania was successful in training a higher proportion of new teachers but failed to keep pace with the rapid enrollment rates. Thus, while the classrooms were still overcrowded and teachers in short supply, the urban-rural disparity of qualified teachers was less stark in Tanzania than in Ethiopia.

Adding to the ensuring shortage of qualified teachers were financial constraints: in Ethiopia less than one third of the budget for the teacher-training programs in 2010 was used; in Tanzania, only 55 percent of the budget was properly allocated to the training program. The remaining 45 percent of Tanzania's teacher-training budget was allocated for administrative purposes, meals, and travel. There is clearly opportunity for non-residential training programs — which, importantly, incur significantly fewer cost — to be explored as a model.

In Kenya, "distance learning" is offered for unqualified, already practicing teachers to enroll in a six-month program to acquire proper certification (Nordstrum 2015). This teacher-training program has proven to be quite intensive, but again the extensive growth has not fully accommodated the increasing student-teacher ratio. For university students hoping to become teachers, different levels of qualifications have

been established, depending on the education level an aspiring instructor plans to teach. Kenyan primary school teachers go through a two-year teacher program and secondary teachers go through a three- to four-year program. While student-teacher ratios in the country still are quite high—as of 2009, student-teacher ratios averaged 47:1 for primary schools and 30:1 for secondary schools (Nordstrum 2015)—this policy will likely prove beneficial in the long run and explains why their school system has done relatively well in educational achievement. "Distance learning" may address the financial constraints facing teacher-training programs and could result in employing more qualified teachers. Then, the challenge for education policy will become implementing new policies and curricula at a pace that can keep up with demand.

The varying levels of certification complicate the cross-country analysis. Teachers in Ghana are only required to attain teacher education certification, meaning that no renewing or reapplying for a teaching license is expected. Students who graduate secondary school can enroll in one of Ghana's 41 colleges for a Diploma in Basic Education, and are then qualified to teach at the primary and junior secondary level. In hopes of improving untrained teachers, Ghana has employed "distance education" (Ghana Education Service 2012) that serves to quickly train more teachers in rural regions. The training programs are now more career-oriented, based on professional accomplishments in the classrooms.

In South Africa, it is mandatory to register with the South African Council for Educators to ensure that teachers are qualified. To be eligible for a teacher-training program, potential teachers must already have obtained a bachelor's degree. This is a time-consuming process with little tangible reward. The large class sizes and lack of

materials in both urban and rural schools have encouraged qualified teachers to seek employment in private, often religious-affiliated schools that do not tend to pay as much as public institutions. The spike in private education indicates that this tradeoff is reasonable for potential teachers.

Table 23: Teacher Attrition Rate

Country	Teacher Attrition Rate
Angola (2010)	16.65302
Benin (2013)	8.73637
Botswana (2007)	3.56171
Burkina Faso (2013)	5.57837
Burundi (2013)	1.72167
Cameroon (2011)	2.57007
Cape Verde (2013)	3.00239
Chad (2011)	3.59568
Côte d'Ivoire (2013)	7.28559
Eritrea (2010)	10.25641
Ghana (2012)	13.44612
Guinea (2013)	6.78501
Lesotho (2012)	3.28901
Malawi (2010)	10.06235
Mali (2010)	7.36715
Namibia (2010)	7.20443
Rwanda (2012)	4.11584
Senegal (2011)	4.63237
Seychelles (2011)	11.23245
South Africa (2013)	4.15011
Togo (2014)	15.23981
Uganda (2011)	1.22896
United Republic of Tanzania (2010)	7.15361

Source: UNESCO Institute for Statistics 2016.

While South Africa's teachers' unions have worked as major actors to negotiate benefits for teachers, such as higher pay and a system of remuneration that is tied between performance and pay, the public school teaching positions are not proving appealing, and have led to a relatively high attrition rate for its level of spending (see Table 23). The entrenched disparity in schools may lead to quality teachers working in higher performing, wealthier schools, and further discourages teachers from wanting to work in low-income school districts. If remunerations were established by performance adjusted by locality and school, quality teachers may be more inclined to work in more challenging school environments. Ideally, these payments would outweigh the nonmonetary benefits teachers receive at private schools.

The cycle of teacher-training in education (students become teachers who teach students who then become teachers) underlines the significance of investing in quality teacher-training programs. Moreover, the teachers themselves must be encouraged to demonstrate good performance in the classroom, as well as an overall intrinsic motivation to improve. One study (Kremer et al. 2005) found that fixed salaries that do not differentiate by performance both undermine job satisfaction and increase teacher absenteeism. If qualified teachers are offered adequate compensation reflective of their performance, then overall intrinsic motivation will improve. This concept has inspired the government of Guinea to establish a pilot program for third and fourth grade teachers in 420 schools that reward teachers at different levels. Based on student performance, surveys, and evaluations, teachers are eligible to "win" (from lowest prize to highest):

1. One bag of rice and a radio or a bronze certificate and community ceremony
2. One bag of rice, a radio, and a cell phone, OR a silver certificate and community and prefectural ceremonies
3. One bag of rice, a radio, a cellphone and a television, OR a gold certificate and community, prefectural, and regional ceremonies
4. One bag of rice, a radio, a cellphone, a television and a generator, OR a platinum certificate, and community, prefectural, regional, and national ceremonies (The World Bank 2014).

The initiative is an exciting opportunity for a country with one of the lowest primary school enrollments in the world. The program is still in process, but has already seen success in enrollment and student outcomes. It also has the opportunity to shift a general cultural viewpoint that will enable teachers to be more respected. Depending solely on student outcomes is best when considered on a regional scale rather than a national one. Certain poorer and rural areas are already at a disadvantage, which makes them much more unfit to compete against their urban counterparts. Nevertheless, Guinea's pilot program provides an exciting model moving forward for other countries' Ministries of Education.

Creating education policy that improves teacher-training programs is the first step to ensuring a quality education for students everywhere. Establishing an incentive scheme to encourage qualified teachers to work in more rural areas, both through monetary and nonmonetary compensation, could act as the first step toward better basic education in sub-Saharan Africa.

Reconstructing Curriculum

Alongside misallocations of funds and poor teacher quality, the case studies found inflexible nationalized curricula hinder educational achievement, especially impacting

rural communities. Given the ethnic and geographical heterogeneity of most sub-Saharan African countries, a unified curriculum, while building nationalist pride, may not be practical for all students. Education plays a particularly complex role as a unifying instrument in South Africa and Rwanda, but also has exacerbated racial and ethnic inequalities through socioeconomic status.

The South Africa and Ghana cases prove the importance of practical and applicable curricula for a successful education system. Rote memorization, compounded with a burdensome theoretical focus, rarely fosters critical thinking abilities that are essential for innovation, nor does this style of formal education have anything practical to do with the needs of rural communities. As seen in Botswana, students in rural regions are more likely to drop out when agricultural obligations coincide. The school curriculum and calendar could take the diverse economies, from subsistence farming to fishing to urban work, into consideration to be more accessible for all students. If educational policy was better localized and funding reliably monitored, parents could be more reassured that the benefits of school outweigh the benefits of their child labor. Teacher-training and curriculum must be linked to specific characteristics of rural schools to apply to real-life rural situations, such as farming, fishing, or animal husbandry.

The "cultural cost" of education, as exemplified in Ghana, also needs to be taken into consideration when employing curricula. Formal schooling is more likely to be at odds with prevailing religious or cultural practices in many rural areas if a national curriculum is inflexible. By granting more regional autonomy in the curriculum, teachers and parents can work together to establish a practical education for its students.

Language policy is another fundamental factor for ensuring that a country's curriculum is relevant and accessible to all. National curricula tend to encourage one national language, despite the two thousand living languages spoken in sub-Saharan Africa (UNESCO 2010). While ostensibly intended to foster a sense of shared identity, the "unifying initiative" can, in fact, fuel violence or resentment of the people speaking minority languages. Language policy has continued to be a problem in Rwanda, where Kinyarwanda is phased out early in primary school and replaced with English, taught by teachers who predominantly speak French. Ideally, language policy can be a blend of the local language and the country's national language, so students unfamiliar with the language are not immediately at a disadvantage in the classroom. In the Rwandan case, transitioning from French to English as a national language benefitted the Tutsi elite, but focusing more on the mother tongue, Kinyarwanda, would be more logical for the general public. Linguistic diversity does represent a challenge for education systems, but also a unique opportunity.

Nigeria has addressed language policy by requiring that teachers can speak the local language in a given region, preferably by someone from the immediate local area (Adedej and Olanrewaju 2011). Another approach was seen in Tanzania, where Kiswahili was deemed an "ethnically neutral" language that can be implemented as a support to form a unified identity, without allowing one ethnic group to dominate (Adedej and Olanrewaju 2011). This is starkly different from Rwanda's English or French policy because those languages carry ethnic overtones in a divided nation. Ethiopia, in recognizing that the degree of alignment between home and school language critically affects learning, has established a well-designed bilingual program to help prevent any

confusion for its students (UNESCO 2015). These multilingual approaches, of course, can prove difficult in specific situations. For instance, Senegal has six national languages, and schools are expected to instruct each student in one of the local languages. The expectation that every teacher can be multilingual can be challenging, but the policy as a concept is moving in the right, equitable direction. As local language becomes more celebrated and used in the classroom, programs such as these should be executed throughout the region.

Private schools may be able to accommodate households if public schools fail to do address the diverse cultural and linguistic characteristics of their population. However, such accommodations found in private school may require rural families to invest in more expensive schools, a burden that could potentially discourage households from education all together. A common language of instruction, while an asset for nation building, must be balanced with the cultural and local languages in order to enable educational access for minority groups.

Lowering the Cost of Education

Even with an appropriate curriculum and quality teachers, the cost of sending a child to school is high, both in the literal sense and in terms of opportunity cost. From PTAs that distribute and supplement funds in South Africa to the supplemental "hidden" costs of education in Ghana, it is clear that the "fee-free" policies that have spread across sub-Saharan Africa are nearly symbolic. The great attraction of private education is its reputation for higher quality; however, private schools are exclusive and expensive. In fact, in rural Rwanda, private schools are so costly that they have been forced to shut their doors, so it is not even an option for these students. Schools that are able to charge

fees should continue to do so, but rural schools that are already at a disadvantage should be given higher government grants.

To further help households that are burdened by the cost of education, there is the opportunity for conditional cash transfer programs that require school attendance. Conditional cash transfers (CCTs) condition payments on activities—such as health checkups or school attendance—and are widely believed to be beneficial in alleviating the short- and long-term dimensions of poverty. Ideally, the cash transfers would over-compensate parents for the cost of sending their child to school, in lieu of the profit they could make working at home or in the fields.

CCT programs have been thoroughly studied and overwhelming evidence suggests they are generally successful as a multifaceted pro-poor policy for raising enrollment and attendance rates (Fiszbein and Schady 2009; Hailu and Soares 2008). Conditions can range from attending 70 percent of school days in a month to 95 percent in a month, sometimes requiring parent-teacher conferences. Some increases in enrollment have been modest. In Malawi, CCT programs targeted households with children and yielded an increase in enrollment by five percent for children aged six to 17 (Hailu and Soares 2008).

Yet other programs in sub-Saharan Africa have made impressive improvements, boasting enrollment rates increasing 18 percent (Hailu and Soares 2008). South Africa's Child Support Grant has targeted the recipients of the cash transfers to the children, irrespective of their household arrangement. The program was introduced in 1998 to cover children below the age of seven, but expanded in 2003 to cover children below the age of fourteen (Barrientos and DeJong 2006). A 2012 UNICEF report found children

who were enrolled in the program exhibited significantly higher scores on math and reading tests as well as attainment. For children whose mothers did not complete primary school, the impacts were greater: "Early enrollment in the [program] raises grade attainment by 10.2 percent (0.38 grades)" (UNICEF 2012, 54). This study also found a strong correlation between earlier receipts of the program and school attainment.

Despite its successful results, the initiative has been unsuccessful in administering the grant to all children enrolled in schools. While this kind of Child Support Grant recognizes the rights of poor children, orphans, and child-headed households, it requires an adult to apply for and collect the grant (Barrientos and DeJong 2006). Another criticism is that the grant amount is too small in value to cover the basic costs of education and childcare (de La Brière and Rawlings 2006; Bastagli 2010). Regardless of bureaucratic challenges, CCTs overall appear as an effective tool in reducing poverty in the short and long term (Kakwani et al. 2005).

The high costs of administering conditional cash transfer programs, as well as the difficulties in targeting and monitoring these them, must not be overlooked. Transferring the money in a timely manner to those who meet the conditions is essential for the validity of the program, but sub-Saharan Africa's infrastructural barriers make this task daunting (Caldés et al. 2006). That said, sub-Saharan Africa has been able to enjoy technological advancements regarding cellphones and mobile money that can make quick and reliable payments much easier. Still, these enhancing incentives will prove futile if the other factors inhibiting households from sending their children to school are not accounted for. For example, it will not matter if a cash transfer program is effectively managed if a school is not within a reasonable distance of a community. Thus, there is a

need for governments to commit to education by committing to infrastructural development alongside classroom quality and CCT initiatives. Given the positive impact of educational attainment on sub-Saharan Africa's development, the expected long term return on this investment is worthwhile.

Improving Employment Opportunities for Graduates

Assuming the barriers of quality, accessibility, and financial feasibility are all overcome, the return on education is reliant on a promising job market upon graduation. Indeed, in Botswana, where the issues facing the education system are relatively less grim in comparison to its neighbors, unemployment is still remarkably high. Students who graduate from secondary and tertiary schools are less willing to fill low-skill positions; however, many firms are unwilling to train the graduates to be qualified for higher-skilled jobs. The overall demand for high-skilled labor is present and the supply of undergraduates is increasing, but the supply of skilled and qualified workers is insufficient. Countries like Botswana must diversify their economies to provide jobs for students after education.

Often, developing countries are keen solely to pursue industrialization as essential to modernization; however, this assumption does not always prove true. Sub-Saharan African countries should look to create an environment for innovation and trade. This involves establishing sensible liberalizing economic policies that could reduce regulation, licensing requirements, and to encouraging diversification. The World Bank's annual "Doing Business" report ranks different countries to determine the "ease of doing business," and analyzes each country's reform trends. Economies in sub-Saharan Africa currently have an average ranking of 143 out of 189 on the ease of doing business scale.

Table 22 shows the rankings, with Mauritius (32), Rwanda (62), Botswana (72), and South Africa (73) ranking the highest in the region, and Eritrea (189), South Sudan (187), and Central African Republic (185) ranking lowest.

Rwanda has implemented the most reforms in the region to improve its economy, including a credit scoring service that supports the ability of banks to access the creditworthiness of potential borrowers (World Bank 2016). The country must work to encourage innovation within its own populations as well, and constantly reaffirm that the markets are demanding what the schools produce.

Table 24: Ease of Doing Business Rankings Data for sub-Saharan Africa

Economy	Rank (1-189)		Reforms	
	DB 2015	DB 2016	DB 2015	DB 2016
Angola	183	181	0	2
Benin	1162	158	4	3
Burkina Faso	149	143	1	1
Burundi	151	152	0	0
Cabo Verde	124	126	1	1
Cameroon	168	172	2	0
CAR	185	185	1	0
Chad	182	183	1	1
DR Congo	187	184	5	2
Côte d'Ivoire	145	142	5	3
Equatorial Guinea	178	180	1	0
Eritrea	189	189	0	0
Ethiopia	148	143	0	0
Gabon	156	162	2	2
Gambia, The	150	151	2	1
Ghana	112	114	2	1
Guinea	171	165	2	1
Kenya	129	108	1	4
Lesotho	110	114	0	1
Liberia	180	179	0	1
Madagascar	166	164	1	4
Malawi	144	141	2	0
Mali	142	143	2	2
Mauritania	176	168	2	3
Mauritius	31	32	2	1
Mozambique	128	133	2	1
Namibia	101	101	0	1
Rwanda	55	62	3	6
Senegal	156	153	6	4
Seychelles	104	95	3	1
Sierra Leone	147	147	3	0
South Africa	69	73	1	0
South Sudan	186	187	0	0
Sudan	158	159	0	0
Swaziland	102	105	2	1
Tanzania	140	139	2	1
Togo	152	150	4	3
Uganda	135	122	2	3
Zambia	91	97	2	2
Zimbabwe	153	155	0	2

Source: World Bank Doing Business Database

Despite its impressive performance on this ranking, Rwanda still faces the issue of high unemployment for educated secondary school leavers and graduates. Indeed, the unemployment rate is expected to be much higher than the reported 7 percent in urban areas and 2 percent in rural (UNDP 2012).[20] Internship programs are common for graduates to develop transferrable, employable skills, but employment is not guaranteed, as there is a lack of actual job opportunity. Foreign labor has, instead, been accused of filling the labor market, claiming that Rwandan universities do not train their students effectively for the realities of the existing labor market. Rwanda has tried to address this through instigating a reemergence of Vocational Education and Training (VET) programs. Numerous attempts to expand vocational schooling in sub-Saharan Africa failed from the 1960s to early 1990s because the many countries had the public sector often offering jobs without demanding basic skills to the upper echelons. As there has been a general reduction in the public sector job market, many Sub-Saharan countries have turned to formally institutionalizing VET program that run in parallel to general education (King 2013).[21]

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[20] The Rwandan government determines the unemployment rate in their Housing and Population Census. Anyone who had been looking for work in the seven-day time frame that the census occurs is considered unemployed. Most people are involved in some kind of agricultural work, but would prefer a job on top of that. The unemployment figure fails to account for this. Additionally, people may be self-employed or part time workers and, while maybe only working 15 hours per week, are still considered employed (Saba 2015).

[21] In 1997 UNESCO segmented secondary education into three categories: general education, pre-vocational, and vocational. While general education is mainly geared to prepare students for additional education and follows more traditional pedagogy, both pre-vocational and vocational education are mainly designed to prepare students for a particular occupation or trade. It offers participants the opportunity to acquire and develop more practical skills and "know-how" (Holsinger and Cowell 2000).

While enrollment rates in these VET programs vary greatly by region, most are around five percent or less (UNESCO 2011), making Rwanda stand out as a model with its 30 percent enrollment. The overall low enrollment rates are partially due to limited institutional support, a stigma that vocational schooling is an inferior alternative to general secondary schooling, and a concern that it will not provide adequate training to gain sufficient access to employment (Eichhorst 2012, 9).[22] Nevertheless, there is a growing interest in these schools. For instance, in Rwanda, VET programs run in tandem with secondary education, focusing on occupations that are beneficial for urban planning and development. There is a clear opportunity for these same schools to focus on agricultural practices, small business ownership, and micro-enterprises for rural communities. In Senegal, Benin, and Nigeria, UNESCO led VET initiatives have proven successful by developing a common format for curricula and learning materials (UNESCO 2011). Keeping VET programs prominent on the political agenda can help ensure economic mobility and educational opportunity moving forward.

As with sub-Saharan Africa's historical, political, educational, cultural, and economic characteristics, the VET structure largely varies in structure and outcome among countries. They were initially modeled after the colonizing countries, so VET programs in sub-Saharan Africa showed different purposes depending on whether a country was Francophone or Anglophone. Francophone countries have tended to have a

[22] The Rhodesian Front government established 'F2' schools in Zimbabwe which provided over 37 percent of students with basic vocational training. During this time it was viewed as an alternative for those unable to attain formal education. After independence it was abolished and, in its recent reestablishment, there remains a negative cultural stigma attached to craft-based technical education (Shizha and Kariwo 2011, 80).

less effective program with the training relationship poorly transferring to the job opportunities available. Anglophone countries, on the other hand, focus more attention to skill development and employment opportunity in the informal sector, promoting entrepreneurship and self-employment training. This outcome-based system, while arguably stronger than the Francophone methodology, has yet to produce the desired results in improving employment rates in sub-Saharan Africa because governments have not invested in it. One reason for this underwhelming productivity of these programs may be because VET courses often fail to account for artisans' micro-enterprises and apprenticeships in the informal economy (Eichhorst et al. 2012). Research by Fares and Puerto (2009) found that of the 23 vocational training centers in rural Tanzania, only three focused on the agriculture sector; in Malawi, where 90 percent of the population is pastoralist and agriculture makes up 36 percent of GDP, the agriculture sector is completely excluded from the VET curriculum (Valle 2012). A general focus on theory and lessons can limit the VET sector from effectively engaging in the informal and formal sector, thus halting the programs from acting as a pro-poor education policy tool.

Germany provides a great model for VET programs. The dual system of learning in the classroom and also through apprenticeship programs is likely one of the reasons the youth unemployment rate is just 7.7 percent (Sirkin 2013). During training students also receive about one-third of the salary that a trained skilled worker would receive, making this educational track that much more appealing.

While a general sense of bureaucratic neglect and societal stigma have led to a lack of investment in these programs, there is opportunity for reform that can positively impact the education sector as a whole. When controlling for GDP and unemployment,

training programs were found to be more effective in low and low-middle income countries than in rich countries (Fares and Puerto 2009). More specific to sub-Saharan Africa, some studies have found that the returns for vocational training are actually higher than general secondary schools for the majority of countries in the region (Bruneforth et al. 2011; Fares and Puerto 2009). VET has potential to increase employment for those who are barred from enrolling in general secondary education. Contextualized understanding of failed programs point to a few systematic elements of success that sub-Saharan African countries can work towards, ensuring relevance of curricula, high quality schooling, and feasible and affordable accessibility.

Offering VET programs alongside formal secondary education could make it accessible for students early on, and also decrease the amount of time spent in a classroom. While it certainly does not make sense for a country to have universal enrollment in this alternative educational experience, it is a great opportunity to reform curriculum to be more practical.

Concluding Remarks

The focus on the right to education in the latter half of the 20th century established the expectation that all children in sub-Saharan Africa should have the chance to go to school and advance, at least, through secondary school. Today, over half of sub-Saharan African countries achieving at least 75 percent youth literacy rate and universal primary education enrollment appears just within reach (MDG Progress Report 2015).

In the two surprisingly successful cases covered by this thesis, compulsory education may well have succeeded in reinforcing the retention of students in schools. In Botswana and Ghana, education is compulsory for ten years and 11 years respectively (see Appendix: Table 30). If the challenges facing both of these countries' education systems are counterbalanced by a longer duration of compulsory education, policymakers throughout the region should consider implementing this policy.

There is an emerging promise of "low-cost" private schools, aimed at teaching the very poorest communities. The performance and quality of these schools are matters of controversy, partially due to a lack of data on results. While there is a fond optimism that privatizing schools will be helpful, they are often undermined by rules and regulations and may not offer substantially better quality education. Rather, the demand for private schools reflects a choice of desperation on the part of parents, reflecting the reality that many sub-Saharan African countries are failing its students (Tooley and Dixon 2006).

Indeed, hidden within the surge in literacy rates and years spent in school stands the stark inequality in educational attainment that remains between sub-Saharan Africa and the rest of the world. Facilitating the creation of an effective school system in the region necessitates not only an open acknowledgment of the challenges facing a

particular country, but also a shift towards practical policy rather than mere political rhetoric. In comparing the relative performance in educational attainment between countries, this thesis has identified four main challenges that stymy educational success:

1. Prolonged ethnic and racial tensions that lead to disadvantaged populations
2. An acute shortage of adequate learning materials and trained teachers
3. Inappropriate or insufficient curricula, creating a disjunction between labor supply and demand
4. High out-of-pocket costs and opportunity costs of education

Often, governments respond to their education crisis with policies that reflect ethnic bias—as in the case of Rwanda's instruction in English policy—even if they are justified rhetorically by superficial arguments that enhance the educational experience. Another concern is responding to the education crisis by applying overly theoretical and complex curricula to a school structure that does not have the necessary foundation. The ultimate aim of any education curricula is to equip students with numeracy, literacy, and a wider skillset to realize the students' potential. Recycling seemingly egalitarian learner-methodologies and competency-based curricula, as was the case with South Africa's C2005 initiative, will fail if not properly implemented. Bridging the gap between classroom realities and educational theories relies on attentively focusing on local contexts and cultures. South Africa failed to do this. Policy makers neglected to re-educate those implementing the outcomes-based education—teachers who were products of the Bantu Education system themselves. An adequate curriculum sensitive to the particular cultures and capabilities within a country is integral in shaping an education system, as are those who are entrusted to teach it.

Moreover, if an education system is corrupt, as Ghana's seems to be, the teacher quality will dwindle and the overall education system will fail its students. If, however,

teachers are somehow motivated to teach in rural and urban areas, there is more opportunity for improvement in educational attainment for all. While Education Ministries continue to build schools and execute publicity-attracting programs, such as Rwanda's One Laptop per Child initiative, teachers have been severely underfunded and are often under-qualified. Multilateral aid organizations need to advocate teacher-training programs in their education policies, even if the positive impacts initially are less concrete. If not, the twin deficit of inadequate curricula and inadequate teachers will hamper any potential educational progress.

Perhaps the most glaring detriment in current political rhetoric is the concept of "fee free" education. While almost every sub-Saharan African country boasts some form of "fee free" school, the cost of education is not only real but also substantial. Ideally, these fees will be eliminated. If not, conditional cash transfer programs to promote schooling should be implemented across the region.

There is much to celebrate in Africa's educational progress over the past half a century. Nevertheless, if the region hopes to capitalize on its abundant human potential, each country must address these challenges and offer meaningful policy solutions to improving them. Every child has the right to the social mobility that education can offer, and every country must shoulder the responsibility of providing it.

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Appendix

Table 25: Data Sources and Comments

	Description	Source	Comments
SE enrollment rates	Figures report the distribution of educational attainment in the population over age 15 by sex and by 5-year age groups.	Barro-Lee Educational Attainment Dataset	Census/survey figures as reported by national statistical authorities and UNESCO
Rural population	Rural population is the percent of people living in rural areas as defined by national statistical offices.	The World Bank	Census/survey figures as reported by national statistical authorities
Per capita income	Per capita income is the mean income of the people in a country calculated by dividing the GDP by the total population. Figures converted to US dollars.	The World Bank	Census/survey figures as reported by national statistical authorities
Rate of homicide	The rate of homicide is the percent of unlawful homicides purposely inflicted as a result of conflict.	UN Office on Drugs and Crime's International Homicide Statistics database	Census/survey figures as reported by national statistical authorities

Table 26: List of sub-Saharan African Countries in Barro-Lee Dataset

Benin	Kenya	Rwanda
Botswana	Lesotho	Senegal
Burundi	Liberia	Sierra Leone
Cameroon	Malawi	South Africa
Central African Republic	Mali	Sudan
Congo	Mauritania	Swaziland
Côte d´Ivoire	Mauritius	Togo
Democratic Republic of the Congo	Mozambique	Uganda
Gabon	Namibia	United Republic of Tanzania
Gambia	Niger	Zambia
Ghana	Reunion	Zimbabwe

Table 27: Gender Disparity in Enrollment Rates 2012

	Expected to never enroll (%)	Enrolled but dropped out (%)	Expected late enrollment (%)
SSA total	50	15	36
SSA Female	56	11	34
SSA Male	42	20	38
World Total	43	23	34
World Female	48	20	32
World Male	37	26	37

Source: UNESCO 2012 (http://data.uis.unesco.org/)

Table 28: Average Teacher Remuneration of Primary and Secondary Education Teachers Financed Fully or in Part by the Government, as a ratio of GDP per capita, 2009 or most recent year

	Primary Education	Lower Secondary Education	Upper Secondary Education
Angola(2003)	1.5	…	…
Benin(2006)	3.6	6.0	8.2
Burkina Faso(2006)	5.3	8.8	9.6
Burundi(2007)	7.6	8.4	12.2
Cameroon(2007)	3.2	5.2	5.5
Cape Verde(2009)	2.5	3.0	3.2
Central African Republic(2007)	3.3	6.9	7.1
Chad(2003)	5.4	8.8	9.8
Congo(2007)	0.9	2.0	2.5
Côte d'Ivoire(2007)	4.9	8.8	9.4
DR of the Congo(2005)	3.9	2.4	2.4
Eritrea(2003)	7.7	…	…
Gambia(2003)	3.7	…	…
Ghana(2007)	4.7	4.7	4.8
Guinea(2005)	1.7	2.9	2.9
Guinea-Bissau(2006)	4.4	6.6	6.6
Kenya(2004)	5.3	7.6	7.6
Lesotho(2004)	5.0	10.4	10.4
Liberia(2008)	3.0	3.1	3.3
Madagascar(2006)	2.9	5.1	8.1
Malawi(2008)	6.3	11.6	11.6
Mali(2008)	4.2	5.6	6.6
Mozambique(2003)	4.0	…	…
Niger(2008)	6.6	7.4	8.6
Nigeria(2003)	4.9	…	…
Rwanda (2008)	2.6	6.4	7.3
Sao Tome and Principe (2006)	2.3	…	…
Senegal (2004)	4.7	5.5	6.6
Seychelles (2003)	1.7	…	…
Sierra Leone (2004)	4.2	5.9	5.9
Sudan (2003)	2.2	…	…
Togo (2007)	6.1	8.9	11.6
Uganda (2007)	4.7	…	…
Zambia (2003)	2.7	…	…
Zimbabwe (2003)	6.1	…	…
Average (35 countries)	4.1	6.3	7.2
Minimum	0.9	2.0	2.4
Maximum	7.7	11.6	12.2

Source: UNESCO http://data.uis.unesco.org/
Note: ".." means the data is unavailable.

Table 29: World Wide Secondary Enrollment Rates

	Total Secondary enrollment 2012 (000)	Total Secondary enrollment change since 1999 (%)	Lower Secondary Enrollment 1999 (%)	Lower Secondary Enrollment 2012 (%)	Upper Secondary Enrollment 1999	Upper Secondary Enrollment 2012 (%)
World	551,686	27	71	91	45	62
Low Income countries	130,721	75	60	83	22	32
High income countries	79,768	-6	96	96	96	99
Sub-Saharan Africa	144075	75	59	79	20	32
Arab States	42,761	22	80	89	45	58
Central Asia	5,479	-20	95	96	82	104
East Asia / Pacific	184382	-18	95	96	43	73
South and West Asia	192,650	24	78	94	32	51
Latin America and the Caribbean	64,696	-8	93	94	63	76
North America / Western Europe	51,349	-3	98	96	97	98

Source: UNESCO 2012 (http://data.uis.unesco.org/)

Table 30: Duration of Compulsory Education (years) as of 2015

Country	Compulsory Education
Angola	6
Benin	6
Botswana	10
Burkina Faso	10
Burundi	6
Cameroon	6
Cape Verde	10
Central African Republic	7
Chad	10
Côte d'Ivoire	10
Democratic Republic of the Congo	6
Eritrea	8
Ethiopia	8
Gabon	10
Gambia	9
Ghana	11
Guinea	6
Guinea-Bissau	9
Kenya	12
Lesotho	7
Liberia	6
Libya	9
Malawi	0
Mali	9
Mozambique	6
Namibia	7
Rwanda	6
Sao Tome and Principe	6
Senegal	11
Seychelles	10
Sierra Leone	9
Somalia	8
South Africa	9
Sudan (pre-secession)	7
Swaziland	7
Togo	10
Uganda	7
United Republic of Tanzania	7
Zambia	7
Zimbabwe	7

Source: UNESCO (http://data.uis.unesco.org/)

Table 31: Lower Income Countries (GNI per capita of $1,045 or less)

Afghanistan	**Gambia, The**	**Niger**
Benin	Guinea	Rwanda
Burkina Faso	Guinea-Bisau	Sierra Leone
Burundi	Haiti	Somalia
Cambodia	Korea, Dem Rep.	South Sudan
Central African Republic	Liberia	Tanzania
Chad	Madagascar	Togo
Comoros	Malawi	Uganda
Congo, Dem. Rep	Mali	Zimbabwe
Eritrea	Mozambique	
Ethiopia	Nepal	

Source: The World Bank 2015 Income Classifications (http://data.worldbank.org/news/new-country-classifications-2015)

Table 32: Lower-Middle Income Economies (GNI per capita of $1,046-$4,125)

Armenia	**Indonesia**	**Samoa**
Bangladesh	Kenya	São Tomé and Principe
Bhutan	Kiribati	Senegal
Bolivia	Kosovo	Solomon Islands
Cabo Verde	Kyrgyz Republic	Sri Lanka
Cameroon	Lao PDR	Sudan
Congo, Rep.	Lesotho	Swaziland
Côte d'Ivoire	Mauritania	Syrian Arab Republic
Djibouti	Micronesia, Fed. Sts.	Tajikistan
Egypt, Arab Rep.	Moldova	Timor-Leste
El Salvador	Morocco	Ukraine
Georgia	Myanmar	Uzbekistan
Ghana	Nicaragua	Vanuatu
Guatemala	Nigeria	Vietnam
Guyana	Pakistan	West Bank and Gaza
Honduras	Papua New Guinea	Yemen, Rep.
India	Philippines	Zambia

Source: The World Bank 2015 Income Classifications (http://data.worldbank.org/news/new-country-classifications-2015)

Table 33 Global Transition Rates from Primary to Secondary School

Country	Effective transition rate from primary to secondary (2008-2009)	Net enrollment ratio, primary (latest year available)
Algeria	96	96.05
Anguilla	92	92.74
Antigua and Barbuda	94	89.18
Argentina	100	104.45
Armenia	99	87.06
Aruba	99	94.54
Austria	100	
Azerbaijan	99	85.17
Bahamas	100	101.28
Bahrain	100	93.19
Barbados	99	104.46
Belarus	100	95.69
Belgium	99	99.87
Belize	96	100.99
Bhutan	98	87.84
Bolivia	96	88.23
Botswana	98	85.60
British Virgin Islands	93	93.47
Bulgaria	98	98.15
Burkina Faso	75	60.42
Burundi	70	101.19
Cambodia	81	95.96
Cameroon	51	94.21
Cape Verde	93	92.89
Cayman Islands	97	81.55
Central African Republic	59	68.06
Chad	83	62.29
Chile	93	93.57
China, Hong Kong Special Administrative Region	100	92.10
China, Macao Special Administrative Region	99	84.59
Colombia	100	89.73
Congo	71	56.73
Côte d'Ivoire	69	61.48
Croatia	99	87.49
Cuba	99	100.18
Cyprus	100	102.73
Czech Republic	100	95.94

Democratic Republic of the Congo	89	33.07
Denmark	100	95.54
Djibouti	89	44.49
Dominica	92	95.22
Dominican Republic	95	83.28
Ecuador	79	100.36
El Salvador	95	92.96
Eritrea	92	35.81
Estonia	99	95.20
Ethiopia	91	82.50
Fiji	100	96.67
Finland	100	97.48
Gambia	83	72.02
Georgia	99	103.49
Germany	100	99.21
Ghana	96	76.69
Greece	97	98.29
Grenada	88	95.14
Guatemala	93	95.44
Guinea	59	74.64
Guyana	94	78.46
Hungary	100	92.37
Iceland	100	99.36
India	85	92.08
Indonesia	92	101.06
Iran	97	100.64
Italy	100	100.09
Jordan	100	89.67
Kazakhstan	100	93.49
Kuwait	100	96.89
Kyrgyzstan	100	86.26
Lao People's Democratic Republic	82	88.98
Latvia	99	93.66
Lebanon	95	88.76
Lesotho	85	71.92
Liberia	66	74.07
Liechtenstein	99	90.35
Lithuania	99	93.35
Madagascar	73	101.51
Malawi	84	100.44
Malaysia	99	94.97
Maldives	96	97.80
Mali	86	61.13

Malta	100	88.87
Mauritania	61	73.41
Mauritius	85	93.24
Mexico	95	104.81
Mongolia	97	88.87
Montserrat	99	97.42
Morocco	87	90.00
Mozambique	62	90.37
Myanmar	74	
Namibia	94	85.41
Nepal	88	71.13
Nicaragua	97	92.78
Niger	72	53.64
Nigeria	44	
Norway	100	98.98
Occupied Palestinian Territory	97	85.55
Pakistan	74	71.61
Panama	98	96.62
Paraguay	90	85.08
Peru	96	94.52
Philippines	99	95.36
Poland	99	95.89
Qatar	100	98.22
Republic of Korea	100	101.64
Republic of Moldova	98	87.52
Romania	99	87.21
Russian Federation	100	93.37
Rwanda	Unavailable	100.09
Saint Kitts and Nevis	97	89.30
Saint Lucia	98	89.78
San Marino	97	92.00
Sao Tome and Principe	73	99.80
Saudi Arabia	99	89.87
Senegal	72	75.75
Serbia	99	94.22
Seychelles	98	103.31
Singapore	91	
Slovakia	99	
Slovenia	99	96.77
South Africa	95	85.10
Spain	100	103.49
Sri Lanka	97	93.59
Sudan	95	

Suriname	68	90.91
Swaziland	84	81.85
Sweden	100	99.71
Switzerland	100	93.61
Syrian Arab Republic	98	96.70
Tajikistan	99	101.12
Togo	78	94.25
Tonga		104.21
Trinidad and Tobago	94	93.00
Tunisia	94	100.65
Uganda	63	94.09
Ukraine	100	89.41
United Arab Emirates	100	81.42
United Republic of Tanzania	36	97.19
Uruguay	88	98.96
Uzbekistan	99	88.68
Vanuatu	85	100.15
Venezuela (Bolivarian Republic of)	98	92.17
Zambia	75	93.04

Note: Net enrollment ratio is defined as the enrollment of the official age group for a given level of education expressed as a percentage of the corresponding population.
Source: UNESCO (http://data.uis.unesco.org/)

Table 34: Ethnic Fractionalization and Cultural Diversity

Country	Ethnic Fraction	Cultural Fract	Rank of Fract
Tanzania	0.953	0.564	14
Democratic Republic Congo	0.933	0.628	7
Uganda	0.930	0.647	5
Liberia	0.899	0.644	6
Cameroon	0.887	0.733	1
Togo	0.883	0.602	8
South Africa	0.880	0.530	20
Congo	0.878	0.562	15
Madagascar	0.861	0.192	36
Gabon	0.857	0.382	29
Kenya	0.852	0.601	9
Ghana	0.846	0.388	28
Malawi	0.829	0.294	31
Guinea Bissau	0.818	0.568	13
Somalia	0.812	0.290	32
Nigeria	0.805	0.660	4
Central African Republic	0.791	0.511	21
Ivory Coast	0.784	0.557	17
Chad	0.772	0.727	2
Mozambique	0.765	0.285	33
Gambia	0.764	0.548	18
Sierra Leone	0.764	0.534	19
Ethiopia	0.760	0.562	16
Angola	0.756	0.242	35
Mali	0.754	0.590	11
Senegal	0.727	0.402	25
Zambia	0.726	0.189	37
Namibia	0.724	0.589	12
Sudan	0.708	0.698	3
Burkina Faso	0.704	0.354	30
Guinea	0.669	0.490	22
Eritrea	0.647	0.398	27

Niger	0.637	0.600	10
Mauritius	0.632	0.448	23
Mauritania	0.625	0.272	34
Benin	0.622	0.400	26
Djibouti	0.606	0.404	24
Zimbabwe	0.366	0.141	40
Botswana	0.351	0.161	38
Burundi	0.328	0.040	42
Swaziland	0.280	0.143	39
Lesotho	0.255	0.057	41
Rwanda	0.180	0.000	43

Source: Fearon 2008, 216-219

Figure 4: Rre Boammaruri

Table 35: Prediction Model Output Residuals

Country	Year	Actual Years Secondary School	Predicted Years Secondary School (Africa)	Predicted Years Secondary School (World)	Residual Africa	Residual World
Benin	1960	0.14	0.0738237	-0.0584923	0.066176	0.198492
Benin	1965	0.16	0.1467727	0.0703525	0.013227	0.089648
Benin	1970	0.18	0.2680724	0.2355053	-0.088072	-0.055505
Benin	1975	0.21	0.4032279	0.4446177	-0.193227	-0.234618
Benin	1980	0.33	0.6011277	0.6649725	-0.271127	-0.334973
Benin	1985	0.53	0.7916517	0.7974594	-0.261651	-0.267460
Benin	1990	0.68	0.9652773	0.9480453	-0.28527	-0.268045
Benin	1995	0.85	1.101082	1.037014	-0.251082	-0.187014
Benin	2000	1.08	1.186477	1.098579	-0.106477	-0.018579
Benin	2005	1.36	1.280559	1.169909	0.079441	0.190091
Benin	2010	1.7	1.377013	1.248929	0.322987	0.451071
Botswana	1960	0.09	-0.0682058	-0.3054091	0.158206	0.395409
Botswana	1965	0.1	-0.0495106	-0.2740033	0.149511	0.374003
Botswana	1970	0.2	0.0755275	-0.1140347	0.124473	0.314035
Botswana	1975	0.25	0.2116945	0.0554232	0.038306	0.194577
Botswana	1980	0.34	0.4526228	0.2571788	-0.11262	0.082821
Botswana	1985	1.26	0.7947283	0.6585063	0.465272	0.601494
Botswana	1990	2.15	1.443764	1.31714	0.706236	0.83286
Botswana	1995	2.62	1.722862	1.603929	0.897138	1.016071
Botswana	2000	2.87	1.914432	1.782053	0.955568	1.087947
Botswana	2005	3.05	2.253125	1.918491	0.796875	1.131509
Botswana	2010	3.19	2.434991	1.993433	0.755009	1.196567
Burundi	1960	0.04	-0.0882934	-0.3438984	0.128293	0.383898
Burundi	1965	0.05	-0.0870199	-0.3359075	0.137020	0.385908
Burundi	1970	0.07	-0.0438915	-0.3135271	0.113891	0.383527
Burundi	1975	0.1	-0.0153794	-0.2852315	0.115379	0.385232
Burundi	1980	0.12	0.0721058	-0.2496078	0.047894	0.369608
Burundi	1985	0.14	0.2259762	-0.2141545	-0.085976	0.354155
Burundi	1990	0.17	0.316332	-0.1738655	-0.146332	0.343866
Burundi	1995	0.23	0.421086	-0.1379956	-0.191086	0.367996
Burundi	2000	0.3	0.4933841	-0.0980635	-0.193384	0.398064
Burundi	2005	0.4	0.5518588	-0.0530251	-0.151859	0.453025

Burundi	2010	0.53	0.6237279	-0.0006308	-0.093739	0.530631
Cameroon	1960	0.17	0.1798482	0.1266027	-0.009848	0.043397
Cameroon	1965	0.25	0.2466045	0.243652	0.003396	0.006348
Cameroon	1970	0.32	0.3553804	0.3800352	-0.035380	-0.060035
Cameroon	1975	0.47	0.5420657	0.6624078	-0.072066	-0.192408
Cameroon	1980	0.64	0.752601	0.8581139	-0.112601	-0.218114
Cameroon	1985	0.83	0.9838937	1.029575	-0.153894	-0.199575
Cameroon	1990	1.04	1.150484	1.169435	-0.110484	-0.129435
Cameroon	1995	1.24	1.264853	1.275371	-0.024853	-0.035371
Cameroon	2000	1.42	1.378278	1.39141	0.041722	0.02859
Cameroon	2005	1.58	1.520703	1.520528	0.059297	0.059472
Cameroon	2010	1.82	1.651498	1.645537	0.168502	0.174463
Gabon	1960	0.24	0.2787312	0.2688041	-0.038731	-0.028804
Gabon	1965	0.34	0.4375562	0.5255104	-0.097556	-0.185510
Gabon	1970	0.43	0.6642695	0.8547223	-0.234270	-0.424722
Gabon	1975	0.72	1.283746	1.376342	-0.563746	-0.656342
Gabon	1980	1.03	1.937239	1.920153	-0.907239	-0.890153
Gabon	1985	1.42	1.993895	2.167092	-0.573895	-0.747092
Gabon	1990	1.77	2.512038	2.504168	-0.742038	-0.734168
Gabon	1995	2.14	2.514166	2.696623	-0.374166	-0.556623
Gabon	2000	2.42	2.612361	2.869249	-0.192361	-0.449249
Gabon	2005	2.77	3.084561	3.088326	-0.314561	-0.318326
Gabon	2010	3.15	3.505172	3.258165	-0.355172	-0.108165
Ghana	1960	0.14	0.3947378	0.4971588	-0.25474	-0.35716
Ghana	1965	0.78	0.4670309	0.6111318	0.312969	0.168868
Ghana	1970	1.54	0.5582464	0.725199	0.981754	0.814801
Ghana	1975	1.86	0.5936986	0.7692413	1.266301	1.090759
Ghana	1980	2.17	0.69012	0.8172777	1.47988	1.352722
Ghana	1985	2.41	0.8527666	0.8840069	1.557233	1.525993
Ghana	1990	2.52	1.009935	1.025746	1.510065	1.494254
Ghana	1995	2.52	1.178925	1.17151	1.341075	1.34849
Ghana	2000	2.76	1.300197	1.317541	1.459803	1.442459
Ghana	2005	2.81	1.438367	1.458683	1.371633	1.351317
Ghana	2010	2.95	1.657185	1.619342	1.292815	1.330658
Kenya	1960	0.11	0.0321544	-0.134008	0.077845	0.244008

Kenya	1965	0.15	0.0595787	-0.0846127	0.090421	0.234613
Kenya	1970	0.23	0.1304043	-0.016585	0.099596	0.246585
Kenya	1975	0.36	0.2090895	0.0901373	0.150911	0.269863
Kenya	1980	0.53	0.3504391	0.2021825	0.179561	0.327818
Kenya	1985	0.65	0.4754494	0.2175426	0.174551	0.432457
Kenya	1990	0.79	0.5697445	0.2456972	0.220256	0.544303
Kenya	1995	0.89	0.6880342	0.3045054	0.201966	0.585495
Kenya	2000	1.01	0.788148	0.3714175	0.221852	0.638583
Kenya	2005	1.16	0.8755926	0.4457687	0.284407	0.714232
Kenya	2010	1.26	1.013138	0.535367	0.246862	0.724633
Lesotho	1960	0.06	-0.0605367	-0.2880831	0.120537	0.348083
Lesotho	1965	0.06	0.0039362	-0.174629	0.056064	0.234629
Lesotho	1970	0.15	0.0830025	-0.085709	0.066998	0.235709
Lesotho	1975	0.27	0.1479895	0.0038679	0.122011	0.266132
Lesotho	1980	0.37	0.2435631	0.0350316	0.126437	0.334968
Lesotho	1985	0.44	0.3607145	0.041871	0.079286	0.398129
Lesotho	1990	0.54	0.5049825	0.1349235	0.035018	0.405077
Lesotho	1995	0.68	0.6803597	0.2578144	-0.00036	0.422186
Lesotho	2000	0.83	0.7814133	0.3580181	0.048587	0.471982
Lesotho	2005	0.99	0.9123241	0.4741796	0.077676	0.515820
Lesotho	2010	1.16	1.052069	0.5851567	0.107931	0.574843
Liberia	1960	0.13	0.2908994	0.3140236	-0.16090	-0.1840
Liberia	1965	0.23	0.36842	0.4519122	-0.13842	-0.22191
Liberia	1970	0.35	0.489414	0.6082448	-0.13941	-0.25825
Liberia	1975	0.55	0.6102253	0.7845881	-0.06023	-0.23459
Liberia	1980	0.7	0.7839626	0.9769089	-0.08396	-0.27691
Liberia	1985	0.82	1.066653	1.259882	-0.24665	-0.43988
Liberia	1990	0.88	1.400172	1.76951	-0.52017	-0.88951
Liberia	1995	0.9	1.264803	1.391545	-0.36480	-0.49155
Liberia	2000	1.04	1.298188	1.330854	-0.25819	-0.29085
Liberia	2005	1.31	1.365813	1.398338	-0.05581	-0.08834
Liberia	2010	1.61	1.46003	1.472641	0.14997	0.137359
Malawi	1960	0.03	-0.0405418	-0.2532175	0.070542	0.283218
Malawi	1965	0.04	-0.0285915	-0.2323662	0.068592	0.272366
Malawi	1970	0.1	0.0260661	-0.1868723	0.073934	0.286872
Malawi	1975	0.16	0.076019	-0.1219613	0.083981	0.281961

Malawi	1980	0.21	0.1732901	-0.0639808	0.036710	0.273981
Malawi	1985	0.19	0.3240312	-0.0213465	-0.134032	0.211347
Malawi	1990	0.24	0.4329924	0.0352629	-0.192992	0.204737
Malawi	1995	0.27	0.5524403	0.1007952	-0.28244	0.169205
Malawi	2000	0.35	0.6376593	0.1544976	-0.287660	0.195502
Malawi	2005	0.49	0.6874131	0.1739676	-0.197413	0.316032
Malawi	2010	0.62	0.7521681	0.1979163	-0.132168	0.422084
Mali	1970	0.03	0.2086577	0.1404085	-0.17866	-0.11041
Mali	1975	0.06	0.267562	0.2182504	-0.20756	-0.15825
Mali	1980	0.1	0.3886374	0.3107659	-0.28864	-0.21077
Mali	1985	0.13	0.5652722	0.4081216	-0.43527	-0.27812
Mali	1990	0.15	0.7043624	0.5031691	-0.55436	-0.35317
Mali	1995	0.18	0.8384585	0.589125	-0.65846	-0.40913
Mali	2000	0.27	0.9499451	0.7001761	-0.67995	-0.43018
Mali	2005	0.4	1.089372	0.8527656	-0.68937	-0.45277
Mali	2010	0.6	1.238371	1.015063	-0.63837	-0.41506
Mauritania	1960	0.07	0.0228727	-0.152746	0.047127	0.222746
Mauritania	1965	0.09	0.1016095	-0.0236933	-0.01161	0.113693
Mauritania	1970	0.12	0.2300526	0.1535152	-0.11005	-0.03352
Mauritania	1975	0.17	0.3938093	0.3965865	-0.22381	-0.22659
Mauritania	1980	0.29	0.6130602	0.6689034	-0.32306	-0.37890
Mauritania	1985	0.36	0.9034621	0.9680117	-0.54346	-0.60801
Mauritania	1990	0.45	1.131376	1.222116	-0.68137	-0.77212
Mauritania	1995	0.55	1.321369	1.380757	-0.77137	-0.83076
Mauritania	2000	0.66	1.445978	1.534475	-0.78598	-0.87448
Mauritania	2005	0.76	1.592413	1.694869	-0.83241	-0.93487
Mauritania	2010	0.87	1.773753	1.851775	-0.90375	-0.98178
Mauritius	1980	1.78	1.039343	1.283978	0.740657	0.496022
Mauritius	1985	2.05	1.155077	1.279229	0.894923	0.770771
Mauritius	1990	2.48	1.455121	1.387312	1.024879	1.092688
Mauritius	1995	2.48	1.676694	1.397541	0.803306	1.082459
Mauritius	2000	2.27	1.751617	1.381529	0.518383	0.888471
Mauritius	2005	2.63	1.92757	1.379747	0.70243	1.250253
Mauritius	2010	2.94	2.292588	1.422569	0.647412	1.517431
Mozambique	1980	0.06	0.2760973	0.10042	-0.216097	-0.04042

Mozambique	1985	0.07	0.5288715	0.3073058	-0.458872	-0.237306
Mozambique	1990	0.08	0.7284467	0.5664485	-0.648447	-0.486449
Mozambique	1995	0.08	0.8668593	0.6636517	-0.786859	-0.583652
Mozambique	2000	0.11	0.9685693	0.7300509	-0.858569	-0.620051
Mozambique	2005	0.16	1.03043	0.7680721	-0.87043	-0.60807
Mozambique	2010	0.28	1.099613	0.8091947	-0.819613	-0.529195
Namibia	1980	1.13	0.8208916	0.6391776	0.309108	0.490822
Namibia	1985	1.36	0.8485684	0.6590084	0.511432	0.700992
Namibia	1990	1.53	1.026137	0.7282363	0.503863	0.801764
Namibia	1995	1.39	1.216875	0.8262684	0.173125	0.563732
Namibia	2000	1.2	1.283943	0.9172712	-0.083943	0.282729
Namibia	2005	1.26	1.612908	1.1339	-0.352908	0.1261
Namibia	2010	1.39	1.96463	1.380278	-0.57463	0.009722
Niger	1960	0.03	0.0021103	-0.1949632	0.027890	0.224963
Niger	1965	0.04	0.0287737	-0.1535356	0.011226	0.193536
Niger	1970	0.04	0.0974969	-0.0758874	-0.057497	0.115887
Niger	1975	0.07	0.1708654	0.0297783	-0.100865	0.040222
Niger	1980	0.1	0.299684	0.1167228	-0.199684	-0.016723
Niger	1985	0.15	0.4278358	0.1533079	-0.277836	-0.003308
Niger	1990	0.2	0.5323029	0.1894688	-0.332303	0.010531
Niger	1995	0.25	0.6157309	0.2019235	-0.365731	0.048077
Niger	2000	0.28	0.6730862	0.2169708	-0.393086	0.063029
Niger	2005	0.32	0.7290851	0.241011	-0.409085	0.078989
Niger	2010	0.4	0.7948592	0.2773107	-0.394859	0.122689
Rwanda	1960	0.07	-0.0807005	-0.3241552	0.150701	0.394155
Rwanda	1965	0.09	-0.0747714	-0.3128289	0.164771	0.402829
Rwanda	1970	0.11	-0.0377294	-0.3000923	0.1477294	0.4100923
Rwanda	1975	0.13	-0.0027002	-0.2659957	0.132700	0.395996
Rwanda	1980	0.16	0.0833741	-0.2338285	0.076626	0.393829
Rwanda	1985	0.19	0.2276222	-0.2193895	-0.037622	0.409390
Rwanda	1990	0.25	0.3173686	-0.2029489	-0.06737	0.452949
Rwanda	1995	0.31	0.4869121	-0.0322862	-0.17691	0.342286
Rwanda	2000	0.36	0.6527074	0.1689103	-0.29271	0.191090
Rwanda	2005	0.41	0.7902507	0.3434183	-0.38025	0.066582
Rwanda	2010	0.46	0.9631575	0.5365704	-0.50316	-0.07657

Senegal	1960	0.12	0.3980329	0.4892967	-0.278033	-0.369297
Senegal	1965	0.17	0.4727212	0.6222249	-0.302721	-0.452225
Senegal	1970	0.25	0.5793236	0.7659475	-0.329326	-0.515948
Senegal	1975	0.32	0.6969472	0.9187564	-0.376947	-0.598756
Senegal	1980	0.42	0.8209196	1.006334	-0.400920	-0.586334
Senegal	1985	0.51	0.9697201	1.071388	-0.459720	-0.561388
Senegal	1990	0.61	1.112017	1.134334	-0.502017	-0.524334
Senegal	1995	0.71	1.190672	1.156461	-0.480672	-0.446461
Senegal	2000	0.79	1.248951	1.18243	-0.458951	-0.39243
Senegal	2005	0.93	1.337677	1.222474	-0.407677	-0.292474
Senegal	2010	1.14	1.426383	1.273548	-0.286383	-0.133548
Sierra Leone	1960	0.14	0.2596165	0.2626877	-0.119617	-0.122688
Sierra Leone	1965	0.17	0.3263489	0.3826128	-0.156349	-0.212613
Sierra Leone	1970	0.22	0.4366706	0.5251945	-0.216671	-0.305195
Sierra Leone	1975	0.29	0.5370619	0.6762103	-0.247062	-0.386210
Sierra Leone	1980	0.36	0.6530991	0.7623842	-0.293099	-0.402384
Sierra Leone	1985	0.46	0.8186383	0.8450652	-0.358638	-0.385065
Sierra Leone	1990	0.55	0.907823	0.8921082	-0.357823	-0.342108
Sierra Leone	1995	0.61	1.031538	0.9406099	-0.421538	-0.33061
Sierra Leone	2000	0.73	1.102275	0.9857283	-0.372275	-0.255728
Sierra Leone	2005	0.95	1.182914	1.038945	-0.232914	-0.088945
Sierra Leone	2010	1.13	1.264687	1.098322	-0.134687	0.031678
South Africa	1960	0.91	0.9432255	1.42895	-0.033226	-0.51895
South Africa	1965	0.97	0.9736223	1.457989	-0.003622	-0.487989
South Africa	1970	1.02	1.048607	1.488275	-0.028607	-0.468275
South Africa	1975	0.99	1.153892	1.521763	-0.163892	-0.531763
South Africa	1980	1	1.406052	1.579401	-0.406052	-0.579401
South Africa	1985	0.93	1.45518	1.592216	-0.52518	-0.662216
South Africa	1990	1.45	1.725059	1.730528	-0.275059	-0.280528
South Africa	1995	2.18	1.974175	1.852436	0.205825	0.327564
South Africa	2000	2.17	1.964404	1.919879	0.205596	0.250121
South Africa	2005	2.38	2.367249	2.098683	0.012751	0.281317
South Africa	2010	2.44	2.719939	2.266324	-0.279939	0.173676
Sudan	1960	0.1	0.1082593	0.0001439	-0.00826	0.099856
Sudan	1965	0.12	0.1670361	0.1044587	-0.04704	0.015541
Sudan	1970	0.14	0.2692336	0.230018	-0.12924	-0.09002

Sudan	1975	0.23	0.3498302	0.3303675	-0.11983	-0.10037
Sudan	1980	0.29	0.4407364	0.3737328	-0.15074	-0.08373
Sudan	1985	0.38	0.6590981	0.4963976	-0.27910	-0.11640
Sudan	1990	0.49	0.8473659	0.7185178	-0.35737	-0.22852
Sudan	1995	0.56	1.013883	0.8610536	-0.45388	-0.30105
Sudan	2000	0.59	1.059178	0.8680924	-0.46918	-0.27809
Sudan	2005	0.61	1.138129	0.8883541	-0.52813	-0.27835
Sudan	2010	0.67	1.280569	0.9250525	-0.61057	-0.25505
Swaziland	1960	0.22	-0.0437015	-0.2703303	0.263702	0.490330
Swaziland	1965	0.25	0.0228411	-0.1657496	0.227159	0.415750
Swaziland	1970	0.43	0.131892	-0.0364707	0.298108	0.466471
Swaziland	1975	0.68	0.2752722	0.1432411	0.404728	0.536759
Swaziland	1980	0.9	0.4606477	0.305977	0.439352	0.594023
Swaziland	1985	1.13	0.6285945	0.4502897	0.501406	0.679710
Swaziland	1990	1.34	0.8293537	0.5186431	0.510646	0.821357
Swaziland	1995	1.56	0.9847541	0.5390949	0.575246	1.020905
Swaziland	2000	1.74	0.9863864	0.5143273	0.753614	1.225673
Swaziland	2005	1.88	1.12471	0.5173665	0.75529	1.362634
Swaziland	2010	2.05	1.229021	0.5153054	0.820979	1.534695
Togo	1960	0.04	0.0898306	-0.0264602	-0.04983	0.066460
Togo	1965	0.05	0.2004354	0.1664848	-0.15044	-0.11649
Togo	1970	0.09	0.3702091	0.4171731	-0.28021	-0.32717
Togo	1975	0.48	0.4323235	0.4866182	0.047677	-0.00662
Togo	1980	0.88	0.5472736	0.5603905	0.332726	0.319610
Togo	1985	1.07	0.6967965	0.629698	0.373204	0.440302
Togo	1990	1.21	0.8400407	0.7160582	0.369960	0.493942
Togo	1995	1.33	0.9597204	0.795813	0.370280	0.534187
Togo	2000	1.46	1.056691	0.8816348	0.403309	0.578365
Togo	2005	1.71	1.154088	0.9753287	0.555912	0.734671
Togo	2010	2.04	1.25572	1.071906	0.78428	0.968094
Uganda	1960	0.12	-0.0376421	-0.2516028	0.157642	0.371603
Uganda	1965	0.1	-0.0081284	-0.2068913	0.108128	0.306891
Uganda	1970	0.1	0.0489379	-0.1604826	0.051062	0.260483
Uganda	1975	0.13	0.076095	-0.1429369	0.053905	0.272937
Uganda	1980	0.2	0.1262402	-0.1271557	0.073760	0.327156
Uganda	1985	0.31	0.3128196	-0.0586892	-0.00282	0.368689

Uganda	1990	0.45	0.4286526	0.0176296	0.021347	0.432370
Uganda	1995	0.5	0.535693	0.0419336	-0.035693	0.458066
Uganda	2000	0.52	0.5957658	0.0578321	-0.07577	0.462168
Uganda	2005	0.61	0.6567348	0.097288	-0.046735	0.512712
Uganda	2010	0.74	0.7558869	0.1628491	-0.015887	0.577151
Zambia	1960	0.04	0.2880093	0.2966314	-0.24801	-0.25663
Zambia	1965	0.05	0.411701	0.5055476	-0.36170	-0.45555
Zambia	1970	0.09	0.6116552	0.7856641	-0.52166	-0.69566
Zambia	1975	0.25	0.7289032	0.9689139	-0.47890	-0.71891
Zambia	1980	0.45	0.9138122	1.16718	-0.46381	-0.71718
Zambia	1985	0.64	0.9977283	1.150281	-0.35773	-0.51028
Zambia	1990	0.84	1.075655	1.143093	-0.23566	-0.30309
Zambia	1995	0.94	1.115251	1.052247	-0.17525	-0.11225
Zambia	2000	0.95	1.108524	0.9589461	-0.1585	-0.00895
Zambia	2005	0.97	1.227289	1.041659	-0.25729	-0.07166
Zambia	2010	1.03	1.409948	1.149413	-0.37995	-0.11941
Zimbabwe	1960	0.41	0.1724901	0.0792666	0.23751	0.330733
Zimbabwe	1965	0.45	0.2180535	0.1593478	0.231947	0.290652
Zimbabwe	1970	0.55	0.315841	0.2698641	0.234159	0.2801359
Zimbabwe	1975	0.66	0.4251013	0.3801408	0.234899	0.279859
Zimbabwe	1980	0.95	0.5630599	0.4855151	0.386940	0.464485
Zimbabwe	1985	1.36	0.7249555	0.5970033	0.635045	0.762997
Zimbabwe	1990	2.01	0.9031972	0.7447401	1.106803	1.265260
Zimbabwe	1995	2.27	1.022804	0.8460201	1.247196	1.423980
Zimbabwe	2000	2.17	1.11144	0.9238257	1.05856	1.246174
Zimbabwe	2005	2.17	1.138864	0.9348382	1.031136	1.235162
Zimbabwe	2010	2.01	1.183884	0.9060764	0.826116	1.103924