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Aid Flow, Debt Relief and Poverty Reduction In Sub-Saharan Africa.

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Abstract

Sub-Saharan Africa is one of the poorest regions in the world and depends heavily on aid flow and debt reduction to foster development and fight poverty. Using 35 of the 48 countries in the region, we examine the impact of aid flow/debt reduction on poverty alleviation and the selected poverty targets are primary completion rate and life rate. A multiple regression model on panel data over the period 2000-2005 shows that aid flow has little effect on poverty alleviation. However, some countries that have reached the completion point of the Heavily Indebted Poor Countries Initiative have demonstrated signs of progress in the selected poverty targets. Hence, alternative tools should be identified to alleviate poverty in the region than the much focus on aid and debt relief.

Acknowledgement

Abbreviations and Acronyms.

EAP	East Asia and Pacific Region
GDP	Gross Domestic Product
GNI	Gross National Income
G-8	Eight of the world's economically leading countries
HDI	Human Development Index
HIPC	Heavy Indebted Poor Countries Initiatives
IMF	International Monetary Fund
MDRI	Multilateral Debt Relief Initiative
MDG	Milleunium Development Goal
ODA	Official Development Assistance
PRSP	Poverty Reduction Strategy Paper
TI	Transpiracy International
UK	United Kingdom
WB	World Bank
WDI	World Development Indicators

1.0 INTRODUCTION

The proportion of people living in poverty in Sub-Saharan Africa has risen over the last decade. There is little evidence of that policies implemented to fight poverty in the region have been successful. There is an urgent need to identify and implement tools and strategies that will lead to poverty alleviation in the region.

A lot of studies have focused on the effectiveness of aid to generate economic growth but lately donors have directed aid towards poverty-reducing goals. A contributing reason for this change is that donor countries have redefined their strategies to reach the Millennium Development Goals (MDGs) which are poverty reducing objectives. The most broadly supported, comprehensive, and specific poverty reduction targets the world has ever established. These Goals commit the international community to an expanded mission of development, one that strongly promotes human development as the key to sustaining social and economic progress in all countries. The goals have been commonly accepted as a framework for measuring development progress and with a time frame to 2015. Sub-Saharan Africa is one of the regions with the lowest growth prospects in the world and its weak institutions further limit its future growth prospects. In addition, the opportunities of achieving the millennium development goals are very low. Sachs et al (2004) have suggested that Africa needs a `big push' in public investment to increase productivity and well governed African countries should be given a substantial increase in official development assistance to enable them to achieve the MDGs. These goals are useful international target to achieve poverty reduction in the region.

The IMF and the World Bank launched the Heavily Indebted Poor Country (HIPC) Initiative in 1996 with the motive that no poor country should face a debt burden that it cannot sustain (manage). In 2005, the G-8 summit renewed the objectives put in place to accelerate the implementation of the debt reducing initiatives. It is difficult to investigate the impact of aid flows and debt relief on poverty across the region directly because comparative data on poverty are hard to find and the scanty existing data are based on income measures of poverty with limits cross-country comparability.[1] A better way to assess the effect of aid flows and debt reduction on poverty

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[1] This is the case because there are several methods in which poverty is measured. All of these measures have their loopholes. http://library.thinkquest.org/05aug/00282/over_whatis.htm

is to examine the impact on selective human development indicators. This approach is reasonable to use as long as there exists a strong relationship between poverty and the level of aggregate human welfare across the region.[2] The approach has previously been used in several research papers. For instance, Boone (1996) examines the impact of aid on parts of the basic human development index such as infant mortality, primary school rates, and life expectancy.

The primary objective of this study is to look at the recent development of Sub-Saharan African countries and quantify the joint impact of aid flows and debt relief on the education and health standards over the 2000 to 2005 period. We therefore ask if there exist a positive relationship between aid flows/debt relief on education and health standards in the recipient countries. These are indirect measures of poverty and have been constructed by the World Bank to provide reliable, directly accessible and comparable estimates of poverty reduction across countries. These targets are included as poverty reducing targets amongst the MDGs. The secondary objective is to look at the impact of other macroeconomic determinants on the education and health standards. These determinants are the per capita GDP growth, the inflation rate, the GNI level, the population growth rate and the corruption level. We also take account of interactive effects between corruption and development assistance in our empirical analysis.

In our empirical investigation, we used an ordinary least squares regression of the educational and health standard based on a linear relationship between aid flow/ debt relief and seven common explanatory variables of poverty reduction. A cross country regression analysis is used on the basis of time series data over the period 2000-2005 from the World Development Indicators (WDI), which is provided by the World Bank, and Transparency International (TI).

This study is closely related to that of Wagman (2008) who empirically examines the impact of debt relief on public spending on education and health over the 1996-2005 period for countries chosen to be part of the HIPC initiative. However, this study is different in: 1) We analyse Sub-Saharan Africa. 2) Our study involves aid flows 3) We take account of corruption effects. 4) We take particular interest in discussing country-specific effects.

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[2] See Morrissey (2004).

Sub-Saharan African is one of the poorest regions in the world and an understanding on how aid flows affects the poverty situation in the region is important. This may assist policy makers, international organizations and donor countries in designing their policies so that aid flows and debt relief will have a stronger impact on poverty reduction.

A limitation of the study is that the WDI has inadequate or unavailable data on the primary completion rate, which we use as our educational standard measure, and the mortality rate, which we use as a base to measure health standards, for 13 of the 48 countries defined as Sub-Saharan Africa according to the World Bank classification.[3] In addition, due to the fact that the mortality rate is measured only every five years, the health standard measures in this study are based only on data for the year 2000 and the year 2005. This has reduced the sample size available for the regressions, thus making the estimation results less complete.

The reminder of the paper is organized as follows. Section 2 presents the background and provides a brief review of previous reports and research studies on the living conditions and development of Sub-Saharan African countries (that are most relevant for this study). Section 3 gives a glance at aid flows and debt relief in the region. Section 4 provides a detailed description of the links between aid flows / debt relief, education and health standards and poverty alleviation. Section 5 presents our common empirical model of the determination of education and health standards, and reports the estimation results. Finally, section 6 concludes. Summary statistics are provided in the appendix.

2.0 ECONOMIC DEVELOPMENT

The average growth rate in the Sub-Saharan region has been 5 percent in the 2000 to 2005 period. However, unsound policies, weak institutions and the risk of conflicts and political instabilities weigh heavily on many countries. Sustaining the present growth rate in the region requires each country's ability to use its income to accelerate the socio-economic development that allows progressive structural and institutional reforms to upgrade productivity, boost resilience to shocks

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[3] These countries are Angola, Democratic Republic of Congo, Cote d'Ivoire, Gabon, Gambia, Guinea-Bissau, Kenya, Liberia, Mayotte, Sao Tome and Principe, Sierra Leone, Somalia and Zimbabwe.

and create conditions that attract private investment to non-commodity sector. (See Regional Economic Report 2007)

The World Bank and the IMF launched the Heavily Indebted Poor Countries (HIPC) Initiative in 1996 to reduce the debt of developing countries. The initiative created a platform for creators to provide debt relief to the world's heavily indebted and poor countries. In 1999, the initiative was modified to be deeper and broader (lower threshold and more countries eligible), faster relief and to have a powerful link between debt relief and poverty reduction.[4] This increased the development spending by freeing up public resources and motivates incentives for good policies as a condition to reach the completion point. The HIPC initiative has approved debt reduction packages to 33 countries and 19 in Sub-Saharan Africa[5]

Recent estimates have shown that aid to the region is staggering and is not in conformity with the pledge made at the G-8 summit at Gleneagles in 2005. Translating increases in the aid flows and debt relief budget into actual disbursements is always difficult but the HIPC is based on that a shift to program based aid that should increase alignment of aid flows with country-specific development strategies is optimal. This will result in program-oriented outcomes and make aid and debt relief more effective. The regions external debt situation had improved to 11% of GDP in the 2007 which was a three decade low, resulting from economic growth and comprehensive debt relief and debt repayment by Angola, Malawi, Nigeria and other countries. To facilitate progress towards the United Nations Millennium Development Goals, the HIPC was supplemented by the Multilateral Debt relief Initiative (MDRI) which allow for 100 percent relief on eligible debt to a group of low-income countries. The initiative have contributed debt relief worth of US $ 3 billion to 17 countries and 8 more could still qualify once they reach the HIPC completion point (Regional Economic Report 2007).

2.1 LIVING CONDITIONS

In the Sub-Saharan African region, 45 to 50 percent of the people live below the poverty line.[6]

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[4] The WB website http://www.go.worldbank.org/ZQ79VCHCOO
[5] The IMF website, http://www.imf.org/external/np/exr/facts/hipc.htm
[6] As measured by a poverty line of a dollar per day in the 1993 US currency value.

This is a much higher proportion of the population than in other regions except for South Asia (where approximately 40 percent of people lives below the poverty line). Social amenities in Sub-Saharan Africa are historically amongst the lowest in the world. For example, the primary school enrollment rate was only 67 percent in the 1980s as compared with 94 percent in South Asia. Also health services are declining in the region with an infant mortality rate equal to 9.3% as compared to 8.4%, 4.6% and 3.9% for South Asia, Latin American and East Asia respectively.[7] After the year 2000, the mortality rate are either stagnating or increasing in most countries in the region. In a study of 15 Sub-Saharan African countries, Kakwani et al (2005) shows that children that are between 5 and 16 years old make up to 34.7 percent of the total population and the incidence of poverty amongst children is higher than that of the population but far higher for the children that do not attend school. This evidence suggests that poverty in households prevents children from attending schools.

Also, in a study of most Sub-Saharan countries, Sachs et al (2004) found that life expectancy is below 60 years of age in most Sub-Saharan countries with the exception of Ghana, Madagascar and Sudan where the life expectancy is below 55 years of age. They further argue that the extreme African poverty leads to low saving rates that cause low investments while large potential inflows of private foreign capital are discouraged by the inadequate infrastructure and the weak human capital stock in the African countries.

In terms of the universal primary completion rate goal, many Sub-Saharan African countries are on track to achieve it by 2015 as a result of significant efforts made by African governments and strong support from their development partners through improved bilateral and multilateral support programs. Many children (mostly from poor backgrounds and rural communities) have no access to primary education, because of inadequate services and school fees that discourage school attendance. Many improvements are required if we are to achieve universal primary education in the region, such as 4.5 million new teachers for example. This can only be achieved if resources continue to flow into the region from their developed partners. (MDG Africa Steering Group 2008)

Many African countries are off track in reaching the goal of reduce child mortality. Many African countries' human resources, equipment and basic health infrastructures are inadequate to provide

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[7] See the World Bank Report (1996). http://www.worldbank.org/afr/findings/english/find73.htm

child and reproductive health services and to prevent the spread of diseases. However, support for more resources for intervention in basic healthcare systems remain insufficient and additional resources is one of the tools required to accelerate the provision of basic facilities and services. (MDG Africa Steering Group 2008).

3.0 THE REGION'S AID FLOW AND DEBT RELIEF AT A GLANCE.

3.1 AID FLOW AND DEBT RELIEF.

The reason for aid has changed over the years as donors have been giving conditional aid to satisfy their current objectives. Currently, there is a large amount of sector specific aid that is directed into social development areas such as education and health to increase human resource development and life expectancy in these economies. Conditional aid should support targets that both partners (donors and recipients) agree are critical for tracking progress on poverty reduction.

The external debt stock of the whole Sub-Saharan African region was 5.7 billion of US dollars in the 1970s and had grown to 177 billion of US dollars at the end of 2003.[8] A call for debt relief is typically justified on the basis of diverted resources that ought to be spent on development activities such as education and health. The MDRI extended 100 percent debt relief to countries that have reached the completion point. The countries in Sub-Saharan Africa are Benin, Burkina Faso, Cameroon, Ethiopia, Ghana, Madagascar, Mali, Mozambique, Niger, Rwanda, Senegal, Tanzania, Uganda and Zambia. The IMF is working hard to incorporate many other countries as they have seen that most of the countries which have reached the completion point are making progress in reaching the MDGs. Mackinnon and Reinikka (1999) have shown that debt service income to Uganda, the first country to prepare a comprehensive PRS, prioritize primary education and basic package of medical health. Standards have been raised in these areas and progress in the MDGs.

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[8] See Moss (2006).

4.0 THE ROLE OF EXTERNAL AID

The IMF and UN objective is to implement aid to achieve a sustained high level of growth that can enable poverty alleviation in developing countries. They advocate for increased foreign aid, the opening of markets to developing countries' exports, and the maintenance of a healthy enabling international economic climate. Aid has often been given in different forms, which include policy advice, technical assistance, financial support and debt relief. The pressure to meet the MDGs by 2015 have further focused the UN's efforts on helping countries assess the macroeconomic consequences of scaling up both their own policy efforts and external financial support. In this context, the UN encourages countries to develop and analyze alternative frameworks to achieve the MDGs, and to make these underpin their poverty alleviation strategies. For instance, increased public spending on education and health standards is not the sole answer, but quality and equity of spending in these sectors are equally important. [9] One of the major achievements of UN aid is to have reduced child mortality rates in Africa by half since the 1960s.[10]

Sub-Saharan Africa is one of the few regions where aid inflows exceed debt service out flows and despite much focus on conditional aid, the region has failed to achieve significant progress in the well beings of its population. Many different donors (individual countries, international organizations, etc) have their own objectives as to the attached conditions of the aid flows into the region. This has further made little progress in poverty reduction and in most cases countries are still worse off as there is little or no progress made in the social sectors.

Developing countries participating in the HIPC initiative first have to present a detailed Poverty Reduction Strategy (PRS) - describing the country's macroeconomic structural and social policies and programs to promote growth and reduce poverty as a condition to fulfill the initiative. This is win-win game to the donors (IMF and WB) and the individual developing countries because if these funds are put in the right place, future funds will not be needed from the donors as poverty is expected to be alleviated in the individual countries. A general objective one should have in mind is that donors' goals are to foster poverty alleviation. However, Collier and Dollar (2002) also pointed out that donors often pursue different aims and aid is usually allocated to their best interest. Aid impact is higher if donors and recipients agreed on the sectors which are most pro-poor.

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[9] http://www.imf.org/external/np/exr/facts/mdg.htm
[10] UN website http/www.un.org/aboutun/achieve.htm.

Gomanee et al (2003) found out that aid affects poverty only through pro poor public expenditures and has shown that expenditures on education and health alleviate poverty. Morley et al (2004) have suggested that the objective of development has been moved from the view of GDP growth to poverty reduction. The point that aid needs to be targeted to improve pro-poor conditions has been supported by many academics, (Collier and Dollar 2001, Pettersson 2006 and Boone 1996 etc) and international organizations such as the UN with more focus on alleviating the conditions of the poor than GDP growth. However, Van de Walle (1995) has suggested that despite the strong focus on pro-poor social sector development, growth is still a recognized prerequisite for development.

The IMF and World Bank have reported an increase in the poverty reducing government expenditures for the HIPCs that have reached the completion point (World Bank and IMF Report 2007). This is a blue print as debt relief is seen as a tool for poverty alleviation because more resources are invested in the social sector activities. This economic development goal is indirectly supported in the endogenous growth literature which identifies human capital accumulation as a core factor behind economic growth. There is thus currently a strong consensus in development policy implementation that aid flow should be channeled to areas that have a strong impact on pro-poor living conditions.

4.1 JUSTIFICATION FOR DEBT RELIEF.

The main justification for debt relief has ranged from moral to mundane arguments as reported in Kraay and Chanvin (2007). The moral argument is simply that it is unjust for rich countries to collect on the debt owed to them by people that are desperately poor. And the mundane economic argument is to free up public resources in heavily indebted countries (that have a so-called debt overhang) to enable the implementation of welfare-increasing government policies. This study is based on the mundane economic argument.

The argument that debt relief is beneficial to countries which are desperately poor has received much attention in the public debate. Currently, focus has been placed on exactly how it can create development and fight poverty. The argument is also supported by empirical evidence of that a

positive relationship prevails between debt relief and human welfare as measured by the mortality rate, (See Morrissey 2004).

The argument that the freed-up resources from debt relief and/or aid inflows are reallocated to social sector improvements is based on the theory of opportunity cost, which implies that the government provides correct conditions that will stimulate economic development. As previously described, the condition for obtaining debt relief from HIPC initiative is to develop a detailed PRS. This implies that resources will be invested in social sectors activities to fight poverty.

Bio-Tchane´ and Yehoue (2007) reported that Sub-Saharan Africa has been experiencing growth for the past four years and is forecasted to do well in the future. This is due to debt cancellation which allows the government to invest resources in areas which brings growth. Sachs (1989) argues that debt reduction creates favorable incentives for the governments in indebted countries. Much debt service payment limits the incentives for government expenditure. Helpman (1989) pointed out that future private investment is negatively affected by future income taxation which depends on future debt service obligations.

The concept of debt overhang as reported by Arsanalp and Henry (2006) is when a country owes a huge sum of money to its donors than it can repay. This situation hampers investment and growth opportunities in many less developed countries and especially in Sub-Saharan Africa which has a huge stock of debt. Also, Hernander and Katada (1996) used the Laffer debt curve to show that most Sub-Saharan African countries have passed the critical point, where they carry too heavy debt burdens to be able to repay their debts, and that it is therefore optimal for debt forgiveness to be in place.

4.1.2 THE FOCUS ON EDUCATION AND HEALTH STANDARDS

This subsection outlines the main arguments behind focusing on education and health standards to achieve pro-poor economic development.

EDUCATION

The classical economist Adam Smith (1776) argued that a well educated employee is like an expensive machine that can produce unique things. In a Sub-Saharan African context, an educated work force will from this perspective stimulate the economy with new ideas and foster development by translating aid or debt relief into achievable projects and programs as managerial capacities are raised. This development requires that investments are made to expand and improve education services and families are encouraged to provide their children with basic primary-level education. On the basis of endogenous growth theory, it can be argued that raised educational standards have a positive impact on economic growth through its effect on human capital accumulation.

Anyanwu and Erhijakpor (2007) reported that educational improvement plays a crucial role in the adaptation of new agricultural technologies, which serves as one instrument to raise health standards. Human capital improvement often impact on individuals' life time incomes, economic growth, fostering economic development and fight poverty in general. In turn, Benhab and Spiegel (1994) point out that human capital accumulation has a strong impact on economic development as it tends to attract physical capital inflows into developing countries.

The low literacy rate in Sub-Saharan Africa slows down development prospects and more investments in education will go a long way to induce changes in labour productivity in the region. Agenor et al (2005) provide a macro economic model that identifies the effect of public capital in health and education. They further present that investing public capital (which comes from aid flows) in education is important because unskilled labour needs to be educated to become more productive which induces economic growth and foster development.

HEALTH CARE

There is a growing realization in the world that health is an important aspect of sustainable development efforts. This has also been recognized in foreign policy circles and in economic development discussions and less developed and developed countries have recognized the crucial importance of health among populations. The importance of change regarding health as an integral part of development is of most interest in the developing world and Sub-Saharan Africa in

particular. If this region can experience a reduction in the spread of some diseases such as HIV/AIDS, TP, Malaria etc, these populations can expect a better life for themselves, or at least for their children (Oluw 2008).

The region still suffers from many health problems with child and maternal mortality amongst the highest in the world. The mortality rate amongst children up to 5 years of age is twice the world average of 17.3 percent and approximately 30 percent of children below 5 years of age suffer from chronic malnutrition. Also, only 63 percent of the region's children have been immunized against tuberculosis and less than 50 percent against, polio and measles.[11]

In a study of 42 Sub-Saharan Africa countries, Benjamin (2003) found a strong relationship between infant mortality and economic development. He also presented that the literacy level has a role in economic development and reduced infant mortality. Many other studies like Bundy (2005) has shown that healthier children tend to do better in school just as healthier workers do their jobs better.

Complete states of physical, social and mental well-being are important for the well-being of human beings. This situation is detrimental in Sub-Saharan Africa whose lack of resources has allowed for the spread of illnesses. Thus the most important issue is to understand the factor that affects good health for its intrinsic value, as it is unquestionable that alleviating illnesses are considered as an essential part of human welfare which promotes development. Inadequate resources have limited the investment in health in Sub Saharan Africa. The targeting of health standards is therefore a key factor in achieving economic development.

4.2 METHOD

4.2.1 EMPIRICAL MODEL

In this section, an econometric model of the determinants of primary completion rate and mortality rate is developed. The linear relationship between the dependent and explanatory variables is

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[11] http://www.worldbank.org/afr/findings/english/find96.htm

examined using data taken from the World Development Indicators and Transparency International and the data ranges from 2000 to 2005

The empirical model specification is:

$$PC_{it} (MR_{it})= \alpha + \beta_1 ODA_{it} + \beta_2\ PCGDPG_{it} + \beta_3 PCGNI_{it} + \beta_4 INF_{it} + \beta_5 PGR_{it} + \beta_6 CL_{it} + \beta_7 (CL \times ODA)_{it} + \varepsilon_{it}$$

where i denotes the country, t denotes the time period, $PC_{it}\ (MR)_{it}$ is the primary completion rate (mortality rate), ODA_{it} is the official development assistance, $PCGDPG_{it}$ is the per capita GDP growth, $PCGNI_{it}$ is the per capita gross national income, INF_{it} is inflation, PGR_{it} is the population growth rate, CL_{it} is the corruption level, $(CL \times ODA)_{it}$ is an interaction term of the corruption level and official development assistance and ε_{it} is the error term.

4.2.2 DEPENDENT VARIABLES

The reason for using the primary completion and mortality rate in measuring the impact of debt relief / aid flow effects on poverty alleviation is straightforward. Lately, much focus in research has been on the impact of debt relief on public spending on education, health standards and poverty reduction. (See Wagman 2008) and Chauvin and Kraay 2007). However, Morrissey (2004) has used the mortality rate as a measure of poverty reduction in assessing aid flow effects on economic development. Reduce child mortality and universal primary completion rate are included in the United Nations Millennium Development goals as targets for improved welfare which leads to poverty alleviation.[12] World Bank (2005) reported that poor health and lack of education has deprived people from productive employment.

The primary completion rate is the basic level for us to assess the literacy level of the economies of most developing countries and for any economy to upgrade its education level, it needs to start from

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[12] Amongst these goals, the second goal is to achieve universal primary education and the fourth goal is to reduce child mortality.

the basic level[13]. Improved primary completion rate in any developing economy extends beyond economic arguments to help in the achievement of all other Millennium Development Goals such as poverty, gender equity, child and maternal mortality, lower HIV/AIDS and other communicable diseases, and environment stability (Bruns, Minget and Rakatomalala, 2003). What matter most in Sub-Saharan Africa development is the capability of the rural people to become efficient producers given their natural resources base because no country has become developed without well-educated people. Good education will not solve all problems. However, improvement in a country's human resources capacity for productivity is a prerequisite for social and economic development (Lindley et al 1996). The G-8 Summit 2008 members supported that education is a means to facility development[14].

Child mortality is a basic health issue in any economy and is particularly true for rural communities which are amongst the poorest of the poor and who account for the bulk of food production in Sub-Saharan Africa. Chao et al (2007) found out in a study of South Africa that poor health overtime are significantly associated with subsequent business closure. Owners of these small businesses will spend more time for treatment than they can in managing their businesses. Many African challenges are directly related to underdevelopment and UNAIDS has reported that 25 million people in Sub-Saharan African are HIV positive or have AIDS and 2 million of them are children[15]. This is an important humanitarian issue in the region as the level of death rate is on the rise which suggests little or no value for human life.

Boone (1996), Burnside and Dollar (2000) have suggested that an appropriate way to measure the impact of aid is to construct a model which allows the recipient government constraint by resources, to use aid to the pursuit of its goals. The reduced form of the model can be used as an estimate for aid effectiveness[16]. This way the primary completion rate and the mortality rate are used as direct measures related to poverty alleviation. Addison (2006) pointed out that more pro-poor expenditure does not necessarily leads to aid effectiveness or poverty alleviation. A better way to assess the

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[13] Literacy level here means following the Millennium Development Targets, the primary completion would be the most appropriate level to measure the basic educational attainment of a country hence literacy level.

[14] http://www.g8.utoronto.ca/summit/2008hokkaido/2008-africa.html

[15] http://data.unaids.org/pub/GlobalReport/2006/200605

[16] Reduced form of the model will mean, use aid to prevent malaria, TP, or for vaccination campaign and used one like the number of children vaccinated to check the effective of aid on the campaign for vaccination.

impact of aid flow and debt relief is to measure the actual impact on health standards. This way, the primary completion rate and mortality rate would give us a better picture on how poverty has been alleviated in these areas. In addition, child mortality rate (primary completion rate) is also considered to other health (educational) issues here because the data are available. In our empirical investigation, we use the life rate instead of the mortality rate as our health standard measure. Specifically, the life rate is calculated as one minus the mortality rate to facility the analysis as higher figures are attached to improved health standards.

4.2.3 EXPLANATORY VARIABLES.

To make clear the variation in the dependent variables; the primary completion rate and life rate in the social sector, we have developed 2 linear regressions models which include 7 explanatory variables. These concur with previous studies investigating the impact of debt relief and aid flow on poverty alleviation. However, we added corruption variable and an interactive term as previously discussed.

The ODA incorporate aid flow and debt relief to capture the impact of the resource inflow, needed by the governments to raise the human development aspects targeted by the Millennium Development Goals such as education and health standards (Pailles 2008). The resources may be used to increase the government expenditures on the pro poor social sectors. This assistance which is given by the OECD/DAC[17] to their less developing partners consists of loans with a grant element of more than 25 percent, includes technical cooperation and assistance and Official aid. The ODA are mobilized by the donors and they encourage their LDC to use it properly to fight poverty and foster economic development in their economies, a goal for Sub-Saharan African countries. However, we cannot be certain that it will be used to increase pro-poor expenditures of government or increase economic growth.

Per capita GDP growth is included amongst the determinants due to the observation that government activities increases more than proportionately with total income. Increased per capita GDP growth follows the presumption that countries have successfully cut domestic and external financial imbalances, enhanced economic efficiency and have given greater priority to public

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[17] Organization for Economic Cooperation and Development / Development Assistance Committee.

spending on health care, education, and other basic social services. In the political economy literature, there is a notion that policy change in the form of raised government consumption typically required ``good times´´ in the economy. For instance per capita growth is influenced by economic policies that raise the ratio of private investment to GDP, promote human capital development, lower the ratio of budget deficit to GDP and avoid over valuation of the exchange rate. The reason for this is that government are less popular in ``bad times´´ and there risk losing office if they impose costly changes. The determinant has previously been used by Wagman's (2008) study on the impact of debt relief on pro-poor social sector performance.

Per capita GNI is included to capture the level of economic development. An increase in the per capita GNI will be followed by increases in household incomes which may be used to raise education and health standards. Per capita GNI is also used by the government to provide for basic pro-poor social sectors activities such as education and health. The per capita GNI is measured in purchasing power parity terms to enable cross-country comparisons. The inclusion of per capita GNI to the commonly used per capita GDP in our analysis, is to capture the net receipt from abroad of wages and salary in addition to GDP. Our argument here is that most of Sub-Saharan Africa countries are poor and many of their citizens work abroad. The incomes they send in as remittances raise the household incomes which are used to raise their living standards.

The inflation rate is used to reflect the macroeconomic stability. Dollar and Kraay (2002) has shown that lower inflation rate raises income for the government and may be used to increase pro-poor facilities such as education and health. Infrastructures such as schools and hospitals are considered as key ingredients for development in a country education and health standards and with high inflation rate, the government may be limited to provide the adequate level of infrastructure to raise standards of living and fight poverty.

The population growth rate is a key variable in determining health and education standards. Research far back has shown that for an economy with high population growth rate, the potential income of the government is reduced. Malthus (1796) in his Essay on Population tries to respond to Adam Smith (1776) question as to why some countries are rich and others are poor by justifying that population growth out powered income growth and the high numbers tends to put pressure on scare resources (Bloom and Canning 2005). Families suffer the impact of this population increases

through resource dilution[18] effects as suggested by Zajonc et al (1979) or it leads to some children to drop from school justifying the quantity-quality theory[19] of children as developed by Becker and Lewis (1973). Population growth tends to put pressure on reproducible resources such as infrastructures like schools, hospitals etc.

Corruption raises transaction cost and uncertainty in the economy and also distorts the policy-making process. The level of corruption is important for the economies of Sub-Saharan Africa as it will impact on the health and educational standards negatively. Much evidence supports the interplay between foreign aid and good policies to be significantly positive. Aid flow and debt service has a positive effect in countries with good institutions (Easterly 2003) and when public resources (e.g aid/debt relief) meant for building productivity-enhancing infrastructures are diverted due to corruption, economic growth will obviously be affected adversely as suggested by Pranab (1997). We allow an interactive variable of corruption and official development assistance to capture the effects of corruption on the use of official development assistance in achieving improved education and health standards. One of the reasons that many people believe that Sub-Saharan Africa will remain the poorest region in the world is the notion that corruption affects its development negatively. In addition, the absent of secure property right reduces the incentives to move resources to sectors where it will increase the rate of returns in any economy (Keeper and Knack 1997). Corruptions level (perception) has an inverse measure-high value for less corrupt countries and lower for more corrupt countries. We also note that they might be a problem with the measurement of corruption level but we trust and believe that this measure the most reliable.

In addition, we extend the model to check for time and country-specific effects to provide a detailed analysis.

The base model is extended to incorporate the corruption aspects which are new contributions as compared to related research (primarily Wagman, 2008) and also to check the robustness of our results when corruption variables are included.

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[18] Resource dilution effect here will be for example more children in a household mostly in the SSA with low income will result to difficulties in provision of household facilities such as education and health.

[19] Quantity-Quality theory of children is a situation larger number of children leads to fall in their quality of investment in their health and education, a typical situation in Sub-Saharan Africa with low income households.

5.0 REGRESSION RESULTS

The estimated results generated by the empirical model are presented in this section. As previously described, we use a common model to examine the determination of educational standards and health standards. The results obtained in analyzing the determination of these factors are summarized in the tables below. To clarify the presentation of our regression results, these are reported in two subsections, one for the educational standard regression, and the other for the health standard regression.

5.1 ESTIMATION RESULTS FOR EDUCATIONAL STANDARD

Table 1 Base Regression Results for Educational Standard.*

Dependent variable: Primary completion rate (%)		
Time period 2000-2005		
Explanatory variables	**Parameter coefficients**	**Parameter coefficients**
Official Development Assistance	1.900(0.323)	1.660(0.404)
Per Capita GDP Growth	-0.435(0.017)	-0.445(0.016)
Per Capita GNI	0.004(0.000)	0.004(0.000)
Inflation	0.206(0.060)	0.206(0.066)
Population Growth Rate	-7.972(0.000)	-7.930(0.000)
T2000		-1.262(0.691)
T2003		-1.053(0.735)
T2005		0.932(0.770)
Countries included	35	35
Observations	208	208
Adjusted R-square	0.59	0.59

*p-values are reported within in parenthesis.

The above table presents regressions results of the empirical model describing the determination of educational standard over the period 2000 to 2005. We have used an ordinary least squares method and the regression is based on 35 of the 48 countries that were defined as Sub Saharan African by WDI. The other countries are excluded from the analysis due to a lack of data (in most or all of the variables). This exclusion makes the estimation less complete as the sample size is reduced and the exclusion of these countries may risk the introduction of a bias in the overall results. Since most of the countries excluded from the regression lack data due to crisis in these countries (ethnic conflicts, political difference etc), the inclusion of these countries would have given a better description of the overall situation in Sub-Saharan Africa. However, the investigation of the impact on educational standards is likely to give an insufficient description of its determination in a crisis situation. As can be seen from the table, the explanatory power is high for the primary completion base regression. Specifically, approximately 59% of the variance in the dependent variable is jointly explained by the independent variables of the empirical model.

The ODA parameter coefficient of the base regression shows that educational standards are positively correlated with the level of official development assistance. The positive sign is in line with the presumption that there exists a positive correlation between primary completion rate and countries benefiting from aid flow and debt relief. However, the fact that the result is insignificant indicates that we can find no support of that the use of ODA has any on average impact in Sub-Saharan Africa.

 The estimated per capita GDP growth parameter coefficient is negative and significant at the 10 percent level, which indicates that an increase of the level of per capita GDP leads to a reduction in the primary completion rate. This result suggests that per capita GDP growth is not a requirement for pro-poor social sector growth. The Per capita GDP growth has an adverse impact on the educational outcome. The negative result is supported by the result of Wagman (2008), who found evidence of a negative impact of per capita GDP growth on government spending on education.

The parameter coefficient for per capita GNI is positive and significant at the 1 percent level which demonstrates a positive relationship between national living standards and educational outcome. This shows that per capital GNI is associated with higher educational standards which suggest that the raised individual living standards increases school attendant as families can spare children from labour and instead send them to school. This result is supported by the endogenous growth

literature, which implies that education serves as a key factor in creating (temporary) growth effects and thereby raised living standards in the population.

The inflation parameter coefficient is positive and significant at the 10 percent level. The regression outcome is surprising as a positive relationship implies that an increase in the inflation rate raises the primary completion rate. An increase in the inflation rate increases the income for government but we do not know if the increased amount will be investing in pro poor social conditions such as education. The case here may be that, the governments have invested more in education as a high inflation leads to increases in the educational outcome. However, high inflation rate limits government investments in development related activities as prices have been increased.

The parameter coefficient for population growth is negative and significant at the 1 percent level. This is in line with the theoretical literature which states that population increases have a negative effect on educational standards. Sub-Saharan Africa is one of the poorest regions in the world and with a population growth, we can expect adverse effects on social amenities such as schools because of the government cost increases and/or the fact that families can no longer afford schooling. Also we would have shortages of teachers and related school equipments. These factors clearly would impact negatively on the primary completion rate.

As seen in the Table 1, the inclusions of time (years) dummy variables do not contribute to explaining the national educational standards and are therefore dropped from the rest of the analysis.

Table 2 Extended Regression Results for Educational Standard.*

Dependent variable: Primary completion rate (%)		
Time period 2000-2005		
Explanatory variables	**Parameter coefficients**	**Parameter coefficients**
Official Development Assistance(ODA)	1.450(0.983)	4.790(0.944)
Per Capita GDP Growth	-0.210(0.461)	-0.195(0.497)
Per Capita GNI	0.005(0.000)	0.005(0.000)
Inflation	0.474(0.000)	0.481(0.000)
Population Growth Rate	-7.201(0.002)	-7.098(0.003)
Corruption	0.070(0.746)	0.047(0.830)
ODA*Corruption	1.000(0.974)	5.710(0.985)
T2000		-1.262(0.691)
T2003		-1.053(0.735)
T2005		0.932(0.770)
Countries included	35	35
Observations	208	208
Adjusted R-squared	0.71	0.72

*p-values are reported within in parenthesis.

Table 2 provides the result for an extended regression incorporating corruption variables. The parameter coefficient for the corruption rate has a positive sign, which suggests that there is a negative relationship between educational standards and the corruption level (since the TI corruption measure is an inverse measure of the corruption level). The corruption perception level attached higher figures for less corrupt countries. This result is however insignificant at any reasonable level of significance and we can thereby provide no support of that corruption affects the educational standards in Sub-Saharan Africa.

The parameter coefficient for the interactive variable is positive. The positive sign is in line with the expectation that there exists a positive correlation between less corrupt Sub-Saharan African countries and primary completion rate. The positive sign suggests that less corrupt countries spend their aid resources more efficiently (due to less waste in the form of bribes etc). But the estimated parameter coefficient is insignificant and we can thereby provide no support of that corruption affects the use of aid means in the region.

The inclusion of corruption variables has increased the size of ODA parameter coefficient which has moved from 1.900 to 4.790. The result is still insignificant with the inclusion of corruption variables and we can thereby provide no support to our overall analysis. The parameter coefficient for per capita GDP growth has become insignificant with the inclusion of corruption variables.

The corruption variables have not shown any sign of influence on the per capita GNI and the population growth rate parameter coefficients. We can therefore say that the results are robust as the inclusions of the corruption variables often affect the outcomes as seen with the other parameter coefficients. However, the parameter coefficient for inflation rate has increased and the significance has also increased from 10 percent level to a 1 percent level with inclusion of these corruption variables.

To examine country specific effects for the regression and be able to compare the results with those of the health standards regression (which only contains 70 observations in total), we have included country specific intercepts one at a time in the base regression.

Table 3 Country Dummy Estimates from Regression for Educational Standard*.

Country Dummies	Parameter coefficients	Adjusted R-Square	Winners	Loser
Benin	1.886(0.775)	0.59	×	
Botswana	1.543(0.827)	0.59	×	
Burkina Faso	-15.345(0.020)	0.60		××
Burundi	-14.809(0.025)	0.60		××
Cameroon	-1.550(0.830)	0.59		×
Cape Verde	42.753(0.000)	0.66	××	
Central African	-30.160(0.000)	0.63		××

Republic				
Chad	-6.005(0.388)	0.59		×
Comoros	-3.869(0.564)	0.59		×
Congo, Rep.	6.785(0.300)	0.59	×	
Equatorial Guinea	-48.854(0.000)	0.65		××
Eritrea	2.636(0.706)	0.58	×	
Ethiopia	-14.426(0.034)	0.60		××
Ghana	9.084(0.187)	0.59	×	
Guinea	-13.184(0.069)	0.59		××
Lesotho	3.309(0.636)	0.59	×	
Madagascar	-3.920(0.552)	0.59		×
Malawi	15.583(0.025)	0.60	××	
Mali	-3.506(0.595)	0.59		×
Mauritania	0.672(0.919)	0.59	×	
Mauritius	13.024(0.061)	0.60	××	
Mozambique	-24.164(000)	0.61		××
Namibia	13.368(0.043)	0.59	××	
Niger	-15.246(0.026)	0.60		××
Nigeria	22.417(0.001)	0.61	××	
Rwanda	-10.591(0.110)	0.59		×
Senegal	-4.866(0.460)	0.59		×
Seychelles	-2.580(0.763)	0.59		×
South Africa	13.484(0.046)	0.59	××	
Sudan	-11.931(0.071)	0.59		××
Swaziland	-5.830(0.380)	0.59		×
Tanzania	10.828(0.113)	0.59	×	
Togo	24.223(0.000)	0.62	××	
Uganda	14.633(0.027)	0.60	××	
Zambia	13.122(0.054)	0.59	××	

*p-values are in parenthesis, ×= parameter coefficient has concurring sign but is insignificant at the 10 percent level, ××= parameter coefficient has concurring sign and is significant at the 10 percent level.

Table 3 shows the country-specific effects obtained in the primary completion rate regression. The positive and significant figures are the countries which are making more progress in the primary school attendance than the average and we describe them as winners.

Cape Verbe is the maximum winner here with the largest positive and significant value. This is a result of the fact that the island has a small population with a lot of Portuguese heritage as Portugal was their colonial master. The island strategy location has caused a boom in the trade sector and has raised incomes for families which could pay for education. Also the presence of a large number of Portuguese with advanced background has made them to invest more to education with the understanding that no economy has ever develop with an uneducated work force.

Uganda was the first country to be declared eligible for the HIPC initiative and has benefited from the initiative since April 1998. The country has been performing well which provides a signal that countries which have attained the completion point has a better opportunity to raise their educational standards. This is also demonstrated by the other countries with a positive country-specific regression effect like Malawi, and Zambia.[20] The positive outcomes of these countries may be explained by the fact that their available resources are used properly because countries are required to prepare a detailed poverty reduction strategy as a condition for attaining the completion point of HIPC initiative. And these countries' positive outcome clearly points out that resources are invested well to achieve the educational millennium development goal that is the universal primary completion rate target.

We can also observe that South Africa has a positive parameter coefficient and this result reflects that the country has been developing over the years and they have been able to provide for social amenities and basic educational standards have been improved.

In table 3, the parameter coefficients that are negative and significant indicate countries which are performing poorly compared to the average and we refer to these countries as the losers.

The negative parameter coefficient figure of Equatorial Guinea is interesting because it is one of the countries with the highest GDP levels in the region due to their oil revenue incomes. There is a notion that basic infrastructure in pro-poor social sectors such as schools and hospitals are prerequisite for growth and poverty alleviation. This country lacks basic social amenities and last human resources leading to its low primary completion rate.

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[20] http://www.un.org/special-rep/ohrlls/ldc/HIPC.pdf

It should also be noted that most of the countries which has been in conflict over the last decade or more like Burundi, Central African Republic, Guinea, Ethiopia, and Sudan display negative country-specific effects[21]. This is a clear signal that conflicts has a negative impact on educational standards as well as other pro-poor development activities, which is straight forward since war affects social infrastructure negatively and decreases overall country performance as these countries has to spend more time in reconstruction than in development.

5.2 ESTIMATION RESULTS FOR HEALTH STANDARD.

Table 4 Base Regression Results for Health Standard*

Dependent variable: Life Rate (%)		
Time period 2000-2005	**Parameter coefficients**	**Parameter coefficients**
Explanatory variables		
Official Development Assistance	-3.010(0.689)	-2.696(0.724)
Per Capita GDP Growth	-0.020(0.905)	0.015(0.932)
Per Capita GNI	0.001(0.025)	0.001(0.025)
Inflation	-0.126(0.015)	-0.127(0.016)
Population Growth Rate	-1.689(0.018)	-1.700(0.018)
T2000	-	-
T2005		-0.208(0.866)
Countries included	35	35
Observations	70	70
R-squared	0.36	0.36

*p-values are reported within in parenthesis.

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[21] http://www.crisisgroup.org/home/index.cfm?id=1098&l=1

Table 4 presents regressions results of the empirical model describing the Health standard determination. In our health standard regression, the data is restricted to include only the years 2000 and 2005 as the life rate is measured on the basis of mortality rate, which is only reported every 5 years. This has resulted in a reduction of the number of observations from 208 in the educational standard regression to 70 in the health standard regression. The explanatory power of the health standard regression indicates that approximately 36% of the variance in the dependent variable is jointly explained by the independents variables.

The parameter coefficient for ODA is negative and this may indicate that aid is associated with a lower life rate. The result is insignificant at any reasonable level of significance and we can thereby provide no support of that ODA affects the health standards in Sub-Saharan Africa

The parameter coefficient for the per capita GDP growth rate is negative and insignificant. The negative sign suggest that per capita GDP is associated with lower health standard. The results show no support of that the per capita GDP affects health standards in Sub-Saharan Africa.

The per capita GNI has a small and positive parameter coefficient which is significant at 10 percent level. This is in line with the presumption that as families raises their household incomes, they can afford better health facilities. These resources will act as a guaranteed to their families lives when they are sick or to use them to purchase preventive drugs such as vaccines. We can thereby say that per capita GNI has a positive relationship with health standards in Sub-Saharan Africa.

The parameter coefficient for inflation rate is negative and significant at the 10 percent level. A fall in inflation rate is followed by a reduction in income which prohibits government to carry out development projects. The negative coefficient shows that the government is limited in their expenditures as a result of a fall in prices of goods and services.

The population growth rate shows a large and positive parameter coefficient which is significant at 10 percent level. This result supports the Becker Quantity-Quality theory of children. An increase in the population growth rate, with the limited resources in Sub-Saharan countries will adversely affect health standard as families will have limited resources to pay for health care facilities and limits government expenditures on development projects.

 The inclusions of time (years) dummy variables do not contribute to explaining the national health standards as seen in the regression outcome and are therefore dropped from the analysis.

Table 5 Extended Regression Results for Health Standard*

Dependent variable: Life Rate (%)		
Time period 2000-2005	**Parameter coefficients**	**Parameter coefficients**
Explanatory variables		
Official Development Assistance	-6.906(0.086)	-6.902(0.092)
Per Capita GDP Growth	-0.440(0.218)	-0.439(0.251)
Per Capita GNI	0.001(0.028)	0.001(0.032)
Inflation	-0.057(0.444)	-0.057(0.456)
Population Growth Rate	-1.776(0.121)	-1.733(0.130)
Corruption	0.111(0.480)	0.112(0.487)
ODA*Corruption	3.534(0.080)	3.533(0.086)
T2000	-	-
T2005		-0.045(0.978)
Countries included	35	35
Observations	70	70
Adjusted R-squared	0.53	0.53

*p-values are reported within in parenthesis.

Table 5 presents the result of the extended health regression, which includes corruption variables. Extending the analysis with corruption variables have caused the explanatory power to increase from 0.36 to 0.53 indicating that about twice as much of the variation in the depending variables can be explained independents variables.

The corruption variable has a positive and insignificant figure. The positive sign suggest that less corrupt countries tend to have higher health standards. However, this result shows no support of that corruption affects health standards in Sub-Saharan Africa.

The interactive term (ODA*Corruption) shows a positive parameter coefficient and is significant at the 10 percent level. This indicates that the effect of ODA is stronger in the region even when

corruption variables are included. This goes against conventional wisdom with the presumption that most of Sub-Saharan Africa low levels of development is due to corruption. Our result shows that low levels of corruptions affect the ODA positively and resulting to an increased in the health standards.

Also the inclusion of these corruption variables has caused the parameter coefficient of ODA variables to increase from -3.010 to -6.906. This shows the importance of corruption and may suggest that if countries become more corrupt, then it will impact strongly (negatively) on its ODA leading to a further fall in health standards. This has caused the ODA parameter coefficient to become significantly at the 10 percent level.

The parameter coefficient for per capita GDP has increase negatively from -0.020 to -0.440. This result may support the theoretical literature as suggested by Keeper and Knack (1997) which indicates that corruption prevent secure property rights which limits the incentives to move resources to their proper sectors thus limit the rate of return in the economy as noticed with the negative per capita GDP figure. However, the result is insignificant at any of the significant level which shows no support of that per capita GDP has effects on health standards in Sub-Saharan Africa.

The corruption variables did not affect the parameter coefficient of per capita GNI as it is still positive and significant at the 10 percent level. We can thereby say the outcome of the per capita GNI is reasonable robust as the sign did not change with the inclusions of these corruption variables

The parameter coefficients for the inflation rate and the population growth rate remain negative but these results become insignificant with the inclusion of corruption variables.

 Also the inclusion of time dummy variable in these extended model do not contribute in explaining the health standard so has therefore been dropped of the analysis.

Table 6 Country Dummy Estimated from Regression For Health Standard*.

Country Dummies	Parameter coefficients	Adjusted R-Square	Winners	Loser
Benin	-1.430(0.682)	0.36		×
Botswana	-3.301(0.357)	0.36		×
Burkina Faso	-6.299(0.069)	0.39		××
Burundi	-2.330(0.510)	0.36		×
Cameroon	-2.887(0.407)	0.36		×
Cape Verde	8.988(0.014)	0.42	××	
Central African Republic	-6.171(0.079)	0.39		××
Chad	-4.523(0.194)	0.37		×
Comoros	-5.026(0.152)	0.38		×
Congo, Rep.	6.442(0.085)	0.39	××	
Equatorial Guinea	-12.685(0.005)	0.43		××
Eritrea	14.056(0.000)	0.47	××	
Ethopia	1.666(0.641)	0.36	×	
Ghana	3.677(0.297)	0.37	×	
Guinea	-3.112(0.384)	0.36		×
Lesotho	-0.665(0.853)	0.36		
Madagascar	2.953(0.393)	0.36	×	
Malawi	3.209(0.363)	0.36	×	
Mali	-8.033(0.018)	0.41		××
Mauritania	2.283(0.509)	0.36	×	
Mauritius	6.320(0.082)	0.39	××	
Mozambique	-1.431(0.681)	0.36		×
Namibia	4.373(0.209)	0.37	×	
Niger	-10.816(0.002)	0.45		××
Nigeria	-3.608(0.409)	0.36		×

Rwanda	-0.098(0.976)	0.36		×
Senegal	1.526(0.662)	0.36	×	
Seychelles	3.380(0.442)	0.36		×
South Africa	2.653(0.457)	0.36	×	
Sudan	4.703(0.184)	0.37		×
Swaziland	-4.836(0.167)	0.38		×
Tanzania	1.217(0.730)	0.38	×	
Togo	0.991(0.778)	0.36	×	
Uganda	2.276(0.522)	0.36	×	
Zambia	-3.090(0.387)	0.36		×

*P-values are in parenthesis, ×= Parameter has coefficient concurring sign but is insignificant, ××= parameter has coefficient concurring sign and significant at the 10 percent level.

The positive and significant figures are the countries which are making more progress in the primary school attendance than the average and we describe them as winners.

As seen in Table 6 only Cape Verde, Congo Republic, Eritrea and Mauritius that have shown a positive and significant relationship for health standards. We can therefore say that these are the countries which are making progress in alleviating the life rate in Sub-Saharan African and we describe them as winners. All the other countries which have shown a positive coefficient do not demonstrate a significant result and therefore show no support to our overall analysis.

Eritrea population is small and with most of the citizens who had spent a lot of time in their formal colonial masters' countries (Italy and Britain) has acquired the managerial styles of these countries. This had caused them to place more value in health knowing good and stable health is a prerequisite for high productivity and brings development.

Using the positive parameter coefficients, the result of the health standard may supports the point that most countries that have reached decision point or completion point of the HIPC initiatives like Ghana, Malawi, and Uganda are making progress towards achieving the Millennium Development Goals and also that these countries are properly implementing their programs and projects as in their poverty reduction strategy. However, these results are insignificant and show no support to the overall analysis.

The negative and significant result from Burkina Faso, Equatorial Guinea and Niger shows that, these countries are performing poorly in health standards. The lack of basic facilities such as schools and hospitals have accounted for the negative performance of Equatorial Guinea performance. The situation in Burkina Faso where we have low level of education for mothers and the presence of illnesses like fevers (malaria) and/or diarrheas and poor access to drinking water. These have resulted to the poor performance in health of these countries.

Table 7 Comparing The Country Dummy For Health and Educational Standard

Country Dummies	Parameter coefficients For Health	Parameter coefficients For Education	Maximum winners	Maximum losers
Benin	-1.430(0.682)	1.886(0.775)		
Botswana	-3.301(0.357)	1.543(0.827)		
Burkina Faso	-6.299(0.069)	-15.345(0.020)		×
Burundi	-2.330(0.510)	-14.809(0.025)		
Cameroon	-2.887(0.407)	-1.550(0.830)		
Cape Verde	8.988(0.014)	42.753(0.000)	×	
Central African Republic	-6.171(0.079)	-30.160(0.000)		×
Chad	-4.523(0.194)	-6.005(0.388)		
Comoros	-5.026(0.152)	-3.869(0.564)		
Congo, Rep.	6.442(0.085)	6.785(0.300)		
Equatorial Guinea	-12.685(0.005)	-48.854(0.000)		×
Eritrea	14.056(0.000)	2.636(0.706)		
Ethopia	1.666(0.641)	-14.426(0.034)		
Ghana	3.677(0.297)	9.084(0.187)		
Guinea	-3.112(0.384)	-13.184(0.069)		
Lesotho	-0.665(0.853)	3.309(0.636)		
Madagascar	2.953(0.393)	-3.920(0.552)		
Malawi	3.209(0.363)	15.583(0.025)		
Mali	-8.033(0.018)	-3.506(0.595)		

Mauritania	2.283(0.509)	0.672(0.919)		
Mauritius	6.320(0.082)	13.024(0.061)	×	
Mozambique	-1.431(0.681)	-24.164(000)		
Namibia	4.373(0.209)	13.368(0.043)	×	
Niger	-10.816(0.002)	-15.246(0.026)		×
Nigeria	-3.608(0.409)	22.417(0.001)		
Rwanda	-0.098(0.976)	-10.591(0.110)		
Senegal	1.526(0.662)	-4.866(0.460)		
Seychelles	3.380(0.442)	-2.580(0.763)		
South Africa	2.653(0.457)	13.484(0.046)		
Sudan	4.703(0.184)	-11.931(0.071)		
Swaziland	-4.836(0.167)	-5.830(0.380)		
Tanzania	1.217(0.730)	10.828(0.113)		
Togo	0.991(0.778)	24.223(0.000)		
Uganda	2.276(0.522)	14.633(0.027)		
Zambia	-3.090(0.387)	13.122(0.054)		

*P-values are in parenthesis, ×= parameter has coefficient concurring sign and significant at the 10 percent level.

Looking at the overall results, Cape Verde and Mauritius are those countries which are making the greatest progress in education and health, suggesting that these are the countries which show support to achieving the Millennium Development Goals.

We can suggest from the results that Burkina Faso, Central African Republic, Equatorial Guinea and Niger are those countries that much needs to be done before they reach the targets of the Millennium Development Goal by 2015. They have demonstrated a negative and significant result at the 10 percent level in both the educational and the health standard regression outcome.

Table 1 shows a positive relationship between countries receiving ODA and the rate of primary completion. This result suggests that ODA are associated with higher educational standards. In contrast to this, the result of table 4 shows a significant and negative relationship which does not support the presumption that ODA are associated with high health standard. Instead the result shows that aid is associated with lower health standards. Though the educational standard results

show a positive relationship, it does not seem very clear that ODA itself leads to poverty alleviation as the result is insignificant at any reasonable significant level. Many things are to be taken in to account here with countries receiving aid flow, such countries should show proper or sound policies and secure property right for easy management of these resources. Also, debt relief does not increase development significantly and is a function of debt service and under a huge amount of debt burden, as Arslanalp and Henry (2006) the debt relief may not be a sufficient off-set for the debt burden and it will still rather make it hard for the country to invest in development related activities as education and health. In this case further debt relief will be needed for these countries to be able to invest in social sector development. Also if these ODA are not directed towards program base or project base, it could be used for other issues such as debt repayment (debt service) or finance military enlargement etc. This makes it hard politically or economically to increase social expenditure to lift the over 60% of people in sub-Saharan living in poverty[22]. All estimated results do not show sign of multicollinearity controlled for by correlation test presented in the appendix in figures A4 and A5.

6.0 CONCLUSIONS

In this paper we have empirically investigated the impact of Aid Flow/Debt Relief on social sector outcome (education and health care) in Sub-Saharan Africa countries over the period 2000 to 2005. The evidence we have uncovered so far is not very encouraging. We found very little evidence that aid flow/debt relief has had an impact on social sector outcomes. We have argued that the most effective way to allocate aid to reduce poverty is by allocating it to those sectors and in those programs that benefit the poor. African countries have a variety of institutions and cultures which emerged from their centuries of slave trade, colonialism, arbitrary borders, tropical diseases, conflicts (wars) and neocolonialism. The idea that development can be foster in this diverse environment by the use of development aid is a laudable or a heroic initiative.

We report that ODA is associated with higher educational standard (primary completion) and lower health standard (Life rate). The positive correlation we found on educational outcome may be due to the requirement that countries prepare the Poverty Reduction Strategy before reaching the completion point and this has brought remarkable progress in the achievement of the Millennium

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[22] http://www.worldbank.org/afr/findings/english/find35.htm

Development Goal for those countries that have reached the completion point. Countries have demonstrated that if poverty alleviation is the outcome of Poverty Reduction Strategy (attached conditionality), then it will be optimal to encourage all countries to properly implement their programs and projects from the conditional base aid. But it is worth noting that conditional aid might slow the development progress as the people (recipients) may not be satisfied with the conditions attached such as management style or loss of control over the resource allocation.

The statistical and negative relationship we found between ODA and health standard should spur enthusiasm for further aid flow and debt relief as those propose in Hokkaido Toyako 2008 by the G-8 countries and also for developing countries to source other avenues on how poverty should be alleviated outside aid flow. This lower health outcome may be a result that aid has a more long term effects on health and that war or conflict countries spend more resources in reconstruction than in development as demonstrated by the countries' specify outcomes.

We begin to doubt what will happen if the development institutions curb or stop their aid flow to these countries or their debt continue to increase? The new debt reliefs also come with new conditions which will in the long run put these countries in poverty. If we base our argument on this presumption of new conditions, then therefore there are few reasons to support the new ODA will achieve its objectives of improving social welfare in the long run? We therefore encourage these countries to begin to look for alternative measures like fair trade rather than aid for development which will be beneficial to them and will not be with the new conditions.

The way forward for Sub-Saharan Africa to overcome its educational and health problems, is that policymakers in the region must regain control over the identification of educational and health priority and make clear the educational and health policies. The governments should work with the private sector and the civil society to develop and implement education and health systems that serve the needs of all the citizens, especially those living in abject poverty.

Since out results nor previous research do not give a robust impact of ODA contribution to long term poverty reduction, we therefore do not argue base on our outcome that ODA provide no support for social sector improvement in recipient countries. But our outcome support previous findings that ODA is unlikely to have a robust developmental impacts. It is important that resources should not be diverted from other more poverty base alleviation areas as fair trade to support the ODA.

7.0 APPENDIX

Table A1: Data definitions and sources.

Variable	Sources	Definition/Explanation.
Primary Completion Rate	WDI	Total Pupils that complete primary level education (annual %)
Life Rate	Generated	Life birth per thousand (measured after 5years) Developed using mortality rate data.
Official Development Assistance	WDI	Official aid, loans and grants (in current USD)
Per Capita GDP Growth Rate	WDI	GDP data in constant local currency unit (annual %)
Per Capita GNI	WDI	GNI data in constant international USD
Inflation	WDI	GDP deflator (annual %)
Population Growth Rate	WDI	Annual increases of a country's population (annual %)
Corruption	TI	Corruption perception index (rating 1-10 and higher figures for least and lower for most corrupt countries).
ODA*Corruption	WDI+TI	A combination of the data to give the interactive term.

Table A2: Summary Statistics for Data in the Educational Standard Regression.

	Minimum	Maximum	Mean	Standard Deviation
Primary Completion Rate	10,00	118,00	55,0817	24,28471
Official Development Assistance	14540000,00	64157800,00	44506691,4286	602931511,71344
Per Capita GDP Growth	-13,00	62,00	4,6779	6,25675
Per Capita GNI	99,00	13750,00	2414,3702	3210,11890
Inflation Rate	-14.00	73,00	8,5096	10,26790
Population Growth Rate	-1,00	7,00	2,4038	0,97326
Corruption	36,00	90,00	69,2973	9,85412
Corruption*ODA	63976000,00	12189982000,00	18405556038,6616	1689178336,59189

Table A3: Summary Statistics for Data in the Health Standard Regression.

	Minimum	Maximum	Mean	Standard Deviation
Life rate	73,00	98,70	86,3600	5,68839
Official Development Assistance	13130000,00	6415780000,00	504798642,8572	845022542,23938
Per Capita GDP Growth	-13,00	13,00	2,8572	3,59114
Per Capita GNI	310,00	13490,00	4,1286	3305,48106
Inflation Rate	-4,00	47,00	2444,8571	11,67203
Population Growth Rate	0,00	7,00	11,1000	1,01704
Corruption	41,00	88,00	69,2973	9,85412
Corruption*ODA	95692000,00	12189982000,00	2114043121,6217	2145430030,43545

Table A4: Pearson Correlations for the Educational Standard Regression

	PCR	ODA	GDPGR	PCGNIppp	INF	POPGR	Corruption	ODACORR
PCR	1,000	-,192	-,043	,776	,096	-,713	-,590	-,183
ODA	-,192	1,000	,100	-,318	,127	,120	,297	,951
GDPGR	-,043	,100	1,000	,030	-,121	-,033	,063	,074
PCGNIppp	,776	-,318	,030	1,000	-,217	-,727	-,762	-,301
INF	,096	,127	-,121	-,217	1,000	,093	,145	,114
POPGR	-,713	,120	-,033	-,727	,093	1,000	,573	,104
Corruption	-,590	,297	,063	-,762	,145	,573	1,000	,162
ODACORR	-,183	,951	,074	-,301	,114	,104	,162	1,000

Table A5: Pearson Correlations for the Health Standard Regression.

	Life rate	ODA	GDPGA	GINppp	INF	POPGR	Corruption	ODACORR
Life rate	1,000	-,200	-,089	,643	-,232	-,566	-,580	-,173
ODA	-,200	1,000	,356	-,256	,277	,027	,346	,969
GDPGA	-,089	,356	1,000	-,019	,075	-,102	,146	,389
GINppp	,643	-,256	-,019	1,000	-,202	-,675	-,738	-,300
INF	-,232	,277	,075	-,202	1,000	,115	,283	,264
POPGR	-,566	,027	-,102	-,675	,115	1,000	,530	,057
Corruption	-,580	,346	,146	-,738	,283	,530	1,000	,268
ODACORR	-,173	,969	,389	-,300	,264	,057	,268	1,000

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