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**THE IMPACT OF FOREIGN AID ON THE HIV/AIDS EPIDEMIC  
IN SUB-SAHARAN AFRICA**

by

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for the Degree of  
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*COMPULSORY DECLARATION*

This work has not been previously submitted in whole, or in part, for the award of any degree. It is my own work. Each significant contribution to, and quotation in, this dissertation from the work, or works, of other people has been attributed, and has been cited and referenced.

Signed by candidate

Signature: signature removed

Date: 18 December 2007

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## ABSTRACT

In May 2007, the United States' President promised to contribute an additional US\$ 30 million to the fight against HIV/AIDS. This is only one of the most recent donor commitment of what has been a substantial amount of foreign aid to fight HIV/AIDS (UNAIDS estimates that donor governments committed US\$5.6 billion in 2006 alone). Compared to other regions in the world, Sub-Saharan Africa is the most heavily affected by HIV and AIDS with an estimated 24.7 million people living with HIV. Due to its high levels of infection, many African states receive substantial amounts of foreign aid specific to HIV/AIDS. However, it is unclear whether foreign aid actually helps to curb the epidemic or if it increases treatment for people living with HIV. In order to sustain this funding, donors need evidence that foreign aid is having a positive impact on the HIV/AIDS epidemic.

In an attempt to find whether such evidence indeed does exist, I investigate the relationship between HIV/AIDS related foreign aid and two indicators of the AIDS epidemic: (1) HIV reduction and (2) access to antiretroviral therapy (ART) treatment. In doing so, I also consider the influence of four national characteristics that may relate both to foreign aid and to HIV prevention and ART coverage and thus obscure the impact of foreign aid. The national characteristics for this study include: state capacity, governance, the type of AIDS response, and the severity of the epidemic.

I collect a wealth of data on 29 Sub-Saharan African countries from various international institutions. The study is transparent and can be replicated, adjusted and expanded for future research. The empirical results indicate that HIV/AIDS related foreign aid increases national ART coverage. It also suggests that national characteristics do not appear to alter the impact of AIDS funding on treatment. The research yields a second major finding: there is no association between foreign aid and HIV prevalence reduction. This result suggests that foreign aid really may not be a very effective component to reducing HIV prevalence; yet it is more likely a reflection of the difficulties in measuring HIV reduction, poor data quality and the difficulties in controlling for a multitude of indicators which may shape HIV reduction.

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## LIST OF ACRONYMS

AIDS	Acquired Immune Deficiency Syndrome
ANC	Antenatal Clinics
API	AIDS Programme Effort Index
ART	Antiretroviral therapy
CRS	Creditor Reporting System
DAC	Development Assistance Committee
GDP	Gross Domestic Product
GFATM	Global Fund to Fight AIDS, Tuberculosis and Malaria
GNI	Gross National Income
HARFA	HIV/AIDS related foreign assistance
IMF	International Monetary Fund
MAP	Multi-country HIV/AIDS Programme
MCA	Millennium Challenge Account
MDG	Millennium Development Goals
NGO	Non-Government Organization
ODA	Official Development Assistance
OECD	Organization for Economic Cooperation and Development
PEPFAR	President's Emergency Plan for AIDS Relief
UN	United Nations
UNDP	United Nations Development Programme
UNAIDS	Joint United Nations Programme on HIV/AIDS
UNGASS	United Nations General Assembly Special Session on HIV/AIDS
US	United States
USAID	United States Agency for International Development
WHO	World Health Organization

# CHAPTER ONE

## INTRODUCTION

*To maintain the AIDS response as a priority we need to show continual results on the ground – ie, that the major investments made in fighting AIDS are having a commensurate effect in terms of averted infections, illness, and deaths.*

– Peter Piot, Executive Director of the Joint United Nations Programme on HIV/AIDS [UNAIDS]<sup>1</sup>

### 1.1 The Problem

Sub-Saharan Africa is home to almost two-thirds of the global HIV/AIDS population amounting to 24.7 million people (UNAIDS, 2006).<sup>2</sup> The epidemic presents a range of threats to the region from undermining economic growth, to challenging security and reversing development gains. This has resulted in strong domestic and international calls for control and management of the disease.<sup>3</sup>

Since the onset of the epidemic in Sub-Saharan Africa, countries have responded to the HIV/AIDS crisis in many ways. African governments and non-state actors such as nongovernmental organizations (NGOs), community based organizations and civil society organizations manage, control and combat HIV/AIDS through a variety of tools ranging from legislation, to education, to public health campaigns, and to providing health services (Poku, 2006). But because Sub-Saharan Africa is also the poorest region in the world, many countries are unable to combat their epidemics with domestic resource alone. Donor aid is needed to provide AIDS-related services, programmes and campaigns aimed at disease reduction and management, such as treating and caring for people living with HIV/AIDS.

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<sup>1</sup> This quote is taken from Piot (2006, p. 527).

<sup>2</sup> HIV (Human Immunodeficiency Virus)/AIDS (Acquired Immune Deficiency Syndrome)

<sup>3</sup> For more information about the threat AIDS poses to the region, see World Bank, International Monetary Fund (IMF), & NetLibrary, Inc (2005).

The international community has responded to the devastating impact of HIV/AIDS through international agreements and financial commitments.<sup>4</sup> For example, the United Nations' (UN) Millennium Development Goals (MDGs) of 2000 committed the world to halting and reversing the spread of HIV/AIDS by 2015. But the international community has made its greatest contribution to fighting HIV/AIDS through foreign aid. Donor resources for AIDS have increased drastically over the past decade and currently finance about 80 percent of HIV/AIDS programmes in Sub-Saharan Africa (de Waal, 2006).<sup>5</sup> The international community has also created institutions to assist in the financing, implementation, and organization of donor funds for HIV/AIDS, such as the World Bank's Multi-country HIV/AIDS Programme (MAP), Global Fund to Fight AIDS, Tuberculosis and Malaria (GFATM) and the United States' President's Emergency Plan for AIDS Relief (PEPFAR).

But while large amounts of HIV/AIDS related foreign assistance have been directed to Sub-Saharan Africa for some time now, few studies have examined its effectiveness. While we know that aid is allocated for prevention and treatment programmes, no research has, of yet, established the degree to which this aid translates into effective prevention or treatment. We also know very little about the influence of the recipient state on the effectiveness of HIV/AIDS related aid. Piot's recent argument that we need to demonstrate such results is a clear reflection of this gap in our knowledge.

In this thesis I will address two questions: (1) Is there a demonstrable link between HIV/AIDS related foreign assistance (HARFA)<sup>6</sup> and the progress made in the fight against HIV/AIDS in Sub-Saharan Africa, and (2) do other factors modify this potential association?

I will consider two indicators of national progress in responding to HIV/AIDS: HIV prevention and HIV treatment. The two indicators are both valid measures of a country's success in responding to HIV/AIDS; however they differ significantly in

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<sup>4</sup> HIV/AIDS is listed as one of most important issues of United States' foreign policy in Africa along with terrorism, energy and competition with China and other countries (Lake, Whitman, Lyman, & Morrison, 2006). This prioritization raises awareness about the issue both globally and within the US.

<sup>5</sup> Donor resources for AIDS in Africa rose tenfold from 1996 to 2005 (de Waal, 2006).

<sup>6</sup> The term HARFA will be used throughout this paper to condense the text.

character. The prevention indicator is 'epidemiological' in that it refers to the change in the number of individuals who are estimated to be infected with the HIV virus; whereas, the treatment indicator is more 'political' or even 'bureaucratic' in that it refers to the extent to which governments (and other stakeholders) are able to provide a supply of antiretroviral medication that meets the demand. The importance of this distinction will be discussed further below; briefly however it relates to the complexity of the causal model used in this study. In this thesis, I will refer to the dependent variable as 'HIV/AIDS progress'. It is a variable with two separate empirical indicators: (1) HIV prevention will be measured by the rate of change in HIV prevalence,<sup>7</sup> and (2) HIV treatment will be measured by antiretroviral therapy (ART) coverage.

As we shall see further below, scholars argue that several factors influence the effectiveness of the response and may influence the efficiency with which HARFA may result in HIV prevention and treatment. The complexity of accounting for the potential effects of all possible factors would be immense and clearly beyond the reasonable scope of this research. For the purpose of this thesis I have therefore limited the inclusion of four factors that are particularly relevant and most frequently cited by the literature: *state capacity*, *national governance*, *national AIDS governance*, and the *severity of the epidemic*.

## **1.2 Significance of study**

There are three general conclusions that I could reach: (1) there is no association between HARFA and HIV/AIDS improvement; (2) HARFA is the universal solvent for combating HIV/AIDS; or (3) the association of HARFA and HIV/AIDS depends on the characteristics of the recipient country. Which conclusion is best supported by the evidence will have important implications for how countries and multilateral institutions should best allocate HIV/AIDS related funding.

The level of HIV/AIDS funding has risen significantly over the past decade due to global awareness and concern over the epidemic. UNAIDS reports that HIV/AIDS

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<sup>7</sup> HIV prevalence indicates the percentage of people in a population who are living with HIV. The change rate of HIV prevalence measures the speed of HIV prevalence growth or decline.

resources rose from approximately US\$ 300 million in 1996 to US\$ 6.1 billion in 2004 (UNAIDS, 2004a). In response to the expansion of AIDS funding, global institutions and donor countries developed aid agencies specific to HARFA. The World Bank launched MAP in 2000 providing loans to national AIDS commissions. In 2001, the international community engaged in discussions on the epidemic at the UN General Assembly Special Session on HIV/AIDS (UNGASS) resulting in the establishment of GFATM. Growing domestic concern in the United States resulted in the development of PEPFAR, which was announced in 2003 as a bilateral aid programme for 15 focus countries (13 of which are in Africa).

Since these three major aid programmes disburse funds separately, they monitor their own resources individually and have different bases for evaluating the effectiveness of their efforts.<sup>8</sup> For example, the World Bank identifies how much money is committed and disbursed; which organizations receive funding; how the money is spent (i.e. number of people trained in HIV/AIDS); and what the outcomes of the funding are (i.e. the number of condoms disbursed, number of testing sites, number of people on antiretroviral therapy) (Görgens-Albino, Mohammad, Blankhart, & Odutolu, 2007).

Similarly, PEPFAR created their own target goals referred to as “2-7-10”: provide treatment for *two* million people living with HIV/AIDS, prevent *seven* million new infections, and provide care for *ten* million people infected with and affected by HIV/AIDS by 2008 (A. Patterson, 2006). Annual congressional reports provide updates on PEPFAR’s progress towards meeting these targets in order to secure future funding.<sup>9</sup>

GFATM differs slightly from the previous two funding agencies. Rather than setting general targeted goals, they distribute grants based on proposal applications to government agencies and local NGOs. Each proposed programme has specified targets in which GFATM monitors and evaluates after 2 years to help decide whether to continue funding the programme (Radelet & Siddiqi, 2007).

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<sup>8</sup> See A. Patterson (2006) for a complete comparison of PEPFAR and GFATM.

<sup>9</sup> For more information specific to PEPFAR, see Otterman (2003).

These three funding agencies appear to work on the assumption that more financial aid directed at HIV/AIDS will help to combat the epidemic. In their own monitoring and evaluation studies, these aid agencies evaluate their programmes activities rather than the effect of the programme on the epidemic. Yet, there is no agreed mechanism among these agencies on how best to evaluate the affect of HIV/AIDS related funding. While there are independent studies that objectively track and analyze the total amount international donors give to HIV/AIDS (Kates & Lief, 2006), there is no research that empirically tests the effectiveness of overall HIV/AIDS related funding in terms of actual prevention or treatment.

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## CHAPTER TWO

### LITERATURE REVIEW

The political science literature on HIV/AIDS can be divided into two main categories: HIV/AIDS impact studies and national HIV/AIDS policy studies. Impact studies are crucial to understand the effects and consequences of the epidemic on societies, economies and politics;<sup>10</sup> whereas the policy studies assess how governments (both donors and recipient countries) respond to the epidemic and why national responses differ.<sup>11</sup> The research agenda for this study represents an alternative category because it combines political science with economics and epidemiology.

The political science and economic literature on foreign aid effectiveness neglects to analyze HARFA specifically. HIV/AIDS is often addressed as one of the eight Millennium Development Goals (MDGs)<sup>12</sup> and much of the literature on the MDGs assumes, without empirical support, that more foreign aid will reduce or reverse the growth of HIV prevalence and increase ART access. The existing literature on national characteristics that affect HIV/AIDS is also surprisingly limited, and often remains untested.

This study intends to establish a link between foreign aid and HIV/AIDS progress, which can then be empirically tested. The following literature review will identify relevant studies and theories with which we can formulate new research questions and develop methodology for this study. I divide the literature into two sections: aid effectiveness and national characteristics that affect HARFA and HIV/AIDS.

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<sup>10</sup> The literature on the impact of HIV/AIDS is extensive. For some examples, look to Barnett and Whiteside (2006), Boone and Batsell (2001), Mattes (2003), Mattes and Manning (2004), Natrass (2004), Strand, Matlosa, Strode, and Chirambo (2005).

<sup>11</sup> For a literature review on how and why states respond differently to the HIV/AIDS epidemic (i.e. governance problems, donor dependency versus state domination, and past experience with public health threats) see Strand (2007) and Baldwin (2005). Also, Lieberman (2005) analyses the impact of politically salient ethnicity on national responses to HIV/AIDS.

<sup>12</sup> The MDGs are to eradicate extreme poverty and hunger; to achieve universal primary education; to promote gender equality and empower women; to reduce child mortality; to improve maternal health; to combat HIV/AIDS, malaria and other disease; to ensure environmental sustainability; and to develop a global partnership for development.

## 2.1 Aid effectiveness

A multitude of studies explore the impact of aid on a range of topics such as: economic growth,<sup>13</sup> democracy,<sup>14</sup> quality of life,<sup>15</sup> the expansion of government,<sup>16</sup> the environment,<sup>17</sup> gender equality,<sup>18</sup> and poverty reduction (which often combines topics such as education and health).<sup>19</sup> Absent from this literature is research relating to the impact of donor assistance on HIV/AIDS. Yet even among the existing literature, academically based knowledge about the effectiveness of foreign aid in general is assorted, contested and extensive.

Yet the literature on general aid effectiveness does provide a basis for understanding the impact of foreign aid on HIV/AIDS. The early foreign aid literature argues that the rationale was to fill the resource gaps in a developing country's macro-economy. "Effective use of aid was designed to bridge the savings/investment gap and the balance of payments gap in the developing countries and put them on the path to self-sustaining development (Sobhan, 2002, p. 540). As levels of aid increased over time, the literature expanded to address conditionality as well as the roles and limitations of multilateral development agencies such as the World Bank and the IMF.<sup>20</sup> Regardless of the institutionalization of foreign aid, Sobhan argues that foreign aid primarily became sustained through the humanitarian concerns of average taxpayers in donor countries. The recent efforts by Jeffrey Sachs and celebrities such as Bono have appealed to these average citizens to fill the resource gaps for poverty reduction. Sachs believes the poverty trap will prevent many countries from achieving the MDGs, which includes a goal focused on HIV/AIDS reduction (2005b). He argues that "development assistance can close this (poverty trap) financing gap" (Sachs, 2005b, p. 5).

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<sup>13</sup> Specific studies include Burnside and Dollar (2000), Burnside and Dollar (2004), Hansen and Tarp (2000), and Easterly (2003). Other studies are cited in Radelet, Clemens, and Bhavnani (2004) and Tarp (2000).

<sup>14</sup> See Finke, Liñán, and Seligson (2006). Also see Djankov, Montalvo, and Reynal-Querol (2006) for further literature.

<sup>15</sup> See Kosack (2003).

<sup>16</sup> See Remmer (2004).

<sup>17</sup> For review of the existing literature see Tarp (2000).

<sup>18</sup> For review of the existing literature see Tarp (2000).

<sup>19</sup> For review of the existing literature see Tarp (2000).

<sup>20</sup> For more background on foreign aid literature, see Radelet et al. (2004).

Sachs and others convinced the international community that increasing foreign aid will lead to the achievement of the MDGs.<sup>21</sup> With a flood of new money going to developing countries there is an ongoing analytical and policy debate on aid effectiveness.<sup>22</sup> For example, Garrett (2007) identifies challenges specific to foreign aid directed at global health. She argues that health targets are too specific; aid gets trapped in bureaucracies and multilateral banks; corruptions is rampant; donor agencies lack coordination; the conditionality of aid prevents homegrown policies and priorities; stove piping is common and does not provide a holistic approach to health because aid is given to specific programs or disease, which limits other basic health care services. Farmer (2007, para. 4) agrees that “the influx of AIDS funding can indeed strangle primary care, distort public health budgets, and contribute to brain drain,” however he argues that this only happens with poorly designed programs. Garrett and Farmer demonstrate that when we move from the literature on foreign aid for development to the literature specific to foreign aid for HIV/AIDS, the debates and core issues remain similar.

Yet much of the literature specific to foreign aid for HIV/AIDS tracks donor commitments and spending or projects how much money is needed to assist developing countries in their fight against AIDS. The more critical assessments address specific donor programmes. For example A. Patterson (2006) claims that PEPFAR money primarily goes to multinational NGOs, US academic institutions and brand-name medicine.<sup>23</sup> Other scholars critique the primary recipient organizations,<sup>24</sup> the slow distribution or cutting of funds,<sup>25</sup> and aid conditionality<sup>26</sup> of PEPFAR. In regard to GFATM and MAP, both agencies are in a transition period and under new leadership (Garrett, 2007). Academics also acknowledge problems with domestic prioritization of HIV/AIDS funding (de Waal, 2003). For example, governments are the primary recipients of GFATM grants and yet there is no evidence to suggest that increasing HARFA influences change in their domestic policy (A. Patterson, 2006).

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<sup>21</sup> For criticism of Sachs’ initiative for foreign aid see Easterly (2006).

<sup>22</sup> For an expanded discussion of this debate, see Ehrenpreis (2007).

<sup>23</sup> For example, US goods and contractors receive 70 percent of PEPFAR funding for Nigeria (A. Patterson, 2006, p. 163).

<sup>24</sup> Almost a quarter of US funding for HIV/AIDS is channeled through faith-based organizations that do not promote condom use (Nelson, 2006).

<sup>25</sup> See Sachs (2005b) and Nelson (2006).

<sup>26</sup> 20 percent of PEPFAR funding is allocated for prevention however 1/3 of this must go to abstinence only education (“HIV prevention policy,” 2006).

Despite criticisms about HARFA, most scholars, including the critics, recognize that foreign aid needs to increase in quality and quantity for the achievement of the MDGs (“How to promote global health”, 2000; A. Patterson, 2007; Poku, 2006).

An influential study by Burnside and Dollar (2000; 2004) provides a model for measuring aid effectiveness.<sup>27</sup> These scholars present interesting and influential results regarding the impact of foreign aid on economic growth (or average annual growth rate of real per capita GDP). Through a comprehensive study, they determine that aid is more effective in countries with good policy management whereby countries experience 1 percent poverty reduction with 1 percent of GDP in assistance (World Bank, 1998, p. 14).<sup>28</sup> Their discovery of a link between foreign aid and good governance provides evidence that other national characteristics can moderate aid effectiveness.

The results from the Burnside and Dollar study altered international foreign aid policy and potentially shaped US AIDS foreign aid policy (Burnside & Dollar, 2004). In response to the study, the United States (US) established the Millennium Challenge Account (MCA) to improve aid effectiveness by giving a significant amount of official development assistance (ODA) to countries which rule justly (based on World Bank indicators and Freedom House scores), invest in their people, and have economic freedom (World Bank and IMF indicators) (Kauffman & Kraay, 2002). In relation to US AIDS foreign aid policy, the Burnside and Dollar study may have influenced the selection of the PEPFAR focus countries. One attribute of PEPFAR is that it focuses on fifteen countries whereby these countries receive significantly more attention and bilateral aid for AIDS from the US. While it is unclear how the US government choose the fifteen PEPFAR focus countries, one can postulate that their selection was influenced by the ideology of the MCA. Radelet (2003) identifies that countries with comparably high HIV prevalence such as Lesotho, Malawi and Swaziland were not selected however these same countries have lower MCA mark, which may be the cause of their exclusion.<sup>29</sup>

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<sup>27</sup> These articles superceded a World Bank report published in 1998 by the same authors.

<sup>28</sup> For a discussion on the methodological problems of this study please refer to Sobhan (2002), Radelet et al. (2004), and Hansen and Tarp (2000).

<sup>29</sup> A. Patterson identifies three criteria that led to the selection of the fifteen PEPFAR focus countries: (1) a country had to be engaged on the AIDS issue and interested in meeting targets; (2) a country had to have a large number of HIV-positive people; and (3) a country needed to have US agencies (mainly

There are far fewer assessments of HARFA in the aid effectiveness literature. De Waal claims that “there is a tendency for HIV/AIDS to become an add-on to other ‘more urgent’ demands” (2003, p. 22). The issue of HIV/AIDS in Africa appears to have been thrown into the complex development pile, making it one of many issues that donors must address.

Thus, there is a major gap in our knowledge about the effectiveness of aid directed at HIV/AIDS prevention, treatment, and care programs. The literature that does exist on foreign aid for HIV/AIDS is mostly commentary on the inefficiencies of aid agencies opposed to quantitative assessments of aid effectiveness. We also discover some good reasons to examine intervening factors that may impact on aid effectiveness because recent studies have identified moderating variables, such as institutions and policy, which influence the effectiveness of foreign aid. As a result, donors have shifted foreign aid generally to countries with good governance.

## **2.2 National characteristics that affect HARFA and HIV/AIDS**

Social scientists researching and writing on HIV/AIDS have identified four national characteristics that may influence the epidemic: state capacity, governance, AIDS governance and the severity of the epidemic. This is not to say that there are not other factors both biomedical and non-biomedical, such as poverty, gender inequality, culture, religion and social capital, which also shape HIV/AIDS progress;<sup>30</sup> but rather that I will focus only on these four influential factors.

De Waal portrays the bleak reality of HIV/AIDS in Africa by stating that “centralized, state-imposed programmes of HIV/AIDS control in Africa” do not exist due to limited state capacity (2003, p.18). In an attempt to explain why some countries have effectively addressed the epidemic while others have failed, Price-Smith, Tauber, and Bhat (2004) empirically examine the impact of state capacity on the reduction of HIV incidence.<sup>31</sup> They posit that in countries with greater levels of state capacity, AIDS

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the Centers for Disease Control and Prevention and United States Agency for International Development [USAID] already working in the country (2006, pp. 141-142).

<sup>30</sup> Kennedy identifies a strong relationship between religiosity and HIV diffusion in South Africa (2006). Please see her work for further citations on non-biomedical factors affecting HIV diffusion.

<sup>31</sup> HIV incidence refers to the yearly infection rate.

programs are easier to implement and hence have more effective responses to the epidemic; whereas, countries with low state capacity are in a cycle of poverty and decline and cannot adopt effective AIDS responses. Using a random sample of 50 countries, they find a strong correlation between state capacity and change in HIV incidence. Yet they recognize that it is not the only variable that determines reduction in HIV levels.

Poku (2006) also identifies state capacity as a potential hindrance to HIV/AIDS progress. He argues that foreign aid cannot be absorbed effectively in many low income countries due to limited capacity. "If left unrectified, this incapacity to absorb funds is most likely to lead donors to reduce their financial commitments, which would jeopardize the long-term sustainability to the AIDS response" (Poku, 2006, p. 355). Poku recognizes that donors and African countries must increase sustained health service delivery. He also indicates that foreign aid and HIV/AIDS interventions work best in conjunction with good governance practices, another state characteristic.

D. Patterson (2001) makes a case that good governance produces more effective national AIDS programs. Using the arguments of Amartya Sen and Joseph Stiglitz, he posits that governance indicators are good guides to the potential effectiveness of AIDS programs. "A focus on improved governance provides concrete and measurable programming options to increase government effectiveness in the response to AIDS, which may also increase visible government commitment as well" (D. Patterson, 2001, p. 42). Hsu (2004, 2005) argues that good governance and development slows and reduces HIV prevalence through a human rights agenda as well as transparency between government agencies and civil society. Baldwin (2005) postulates that "if education and persuasion are to be central to prevention, a free, independent, and trustworthy mass media are required" (ibid: 288). In a study on the advantages of democracy for development, Halperin, Siegles and Weinstein point out that "the openness encouraged under democratic governments is a distinct advantage for public health efforts" (2005, p. 42). Even though the Halperin et al. study is not solely focused on Africa, they empirically show that democracies have lower HIV prevalence than autocracies. Many scholars advocate that good governance practices, or more democratic governance, improve the effectiveness of the response to the HIV/AIDS epidemic.

Separate from governance, some scholars have identified AIDS governance as a third national characteristic that may affect HIV/AIDS reduction and treatment. AIDS governance refers to how governments respond to the HIV/AIDS epidemic specifically. For instance, Hsu (2005) identifies specific governance practices for HIV/AIDS control necessary for an effective AIDS response.<sup>32</sup> Strand (2007) provides the most comprehensive and testable hypothesis on the impact of AIDS governance. He suggests that this concept should be considered an independent variable that describes the type of response to the epidemic. He identifies three types of governmental responses to HIV/AIDS: idealistic, authoritative, and authoritarian and asserts that the first two occur under democratic regimes. Where an idealist response seeks to maximize aspects such as participation, accountability and human rights, the authoritative response would consider reducing those rights if that would generate a more effective response.<sup>33</sup> Strand's argument suggests that the type of AIDS response, or AIDS governance, may influence HIV/AIDS progress.

The type of epidemic itself is a final element that might influence HIV/AIDS progress. Barnett and Whiteside (2006) argue that social, economic and cultural factors explain the level and flows of the HIV/AIDS epidemic. They identify four types of flows and levels of the epidemic experienced by different societies: (1) low and static, (2) slow-moving, (3) slow-moving that will gain momentum sustaining high levels of infection, and (4) rapid increase with highest overall levels of infection. Through an analysis of why the epidemic happens, they consider social cohesion and wealth to determine the susceptibility of a country to the epidemic. Therefore, it is argued that African countries experience different epidemiological features of HIV/AIDS such as different levels of HIV infections, different types of the virus and different infected populations. The level and flow of the epidemic may affect HIV reduction and treatment.

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<sup>32</sup> These factors include timing/early governmental response, political leadership, participation by civil society, multisectoral mobilization, balanced prevention and treatment approach, human rights/protecting the rights of people living with HIV/AIDS, and transparency of information.

<sup>33</sup> Strand (2007) gives a comprehensive literature review supporting the argument that authoritative interventions may generate a more effective response than interventions based on idealistic AIDS governance. For instance, while compulsory HIV testing would infringe on individual rights it would most likely yield public health benefits.

A number of recent studies have begun to unpack and analyze the associations among HIV/AIDS and these national characteristics (Nattrass, 2006; A. Patterson, 2006; Bor, 2007; Lieberman, 2007). For example, a study by A. Patterson (2006) examines the relationship between national characteristics and state efforts to fight AIDS. In a qualitative assessment, she considers the impact of four state factors: centralization of power, neopatrimonialism, state capacity, and security on state efforts to fight AIDS in four African countries: Zimbabwe, Uganda, Swaziland and South Africa. She uses data from the AIDS Programme Effort Index (API) (United States Agency for International Development [USAID], UNAIDS, World Health Organization [WHO], & the POLICY Project, 2003) to measure state efforts to combat the disease.<sup>34</sup> Her findings indicate no clear pattern among these four countries suggesting that not one state element determines AIDS efforts more or less than another. She also notes that these national characteristics are interrelated preventing our ability to test which factor is the most driving determinant of AIDS efforts. While A. Patterson does not specifically look at epidemiological features of the epidemic, she begins to look systematically at the associations among state characteristics and HIV/AIDS.

Nattrass (2006) specifically addresses the impact of economic and political factors on ART coverage across 77 countries. She considers per capita income, governance indicators, region, and HIV prevalence in multiple regressions. Her findings indicate that higher levels of per capita income result in greater access to ART coverage. She also identifies that efforts to increase access to treatment have been more successful in democratically governed countries. Finally, she demonstrates that Latin America and Africa are providing better ART coverage than would be expected. Due to the complexity of donor funding, she excludes HARFA from her analysis.

From this literature review, five key variables are identified as possible factors that may influence HIV/AIDS reduction and treatment: foreign aid, severity of epidemic, state capacity, governance, and AIDS governance.

The dramatic increase of HARFA in the past decade suggests that donors suppose foreign aid to promote effective AIDS responses. I will empirically test this

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<sup>34</sup> Since I use the API as a measure of “AIDS governance”, further discussion on this index can be found on pages 38 of this thesis.

assumption while considering the aforementioned national characteristics. The following section will conceptualize the independent, dependent, and moderator variables.

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## **CHAPTER THREE**

### **RESEARCH DESIGN**

To meet the MDG targets of 2015, UNAIDS projects that the resources needed for prevention and treatment will only increase. Poku posits that “the costs of a comprehensive HIV/AIDS response for sub-Saharan African countries would increase from US\$6.8 billion in 2007 to US\$ 15.5 billion by 2015” (2006, p. 353). In order to encourage governments to sustain these types of increases and maintain the prioritization of HIV/AIDS in Africa, donor agencies need evidence that HARFA is actually helping the HIV/AIDS epidemic in Africa. We need to explore systematically the impact of HARFA on HIV/AIDS whilst considering the influence of other possible national characteristics. The general claims that aid works more effectively in countries with better state capacity or governance also needs examination. In addition, we must consider the influence of AIDS governance and severity of the epidemic.

#### **3.1 Research Methodology**

The main concepts of this study come out of the literature review in the previous chapter. For the most part, theory determined the selection of the variables; however one can never avoid the realities of data availability. For example, I was forced to exclude behaviour change as an indicator of HIV/AIDS progress because of insufficient data.

I examine the association between HARFA and HIV/AIDS reduction and treatment through a quantitative methodology using three types of statistical analyses: bivariate analysis, multiple regression analysis and interaction analysis. First, I want to establish whether there is indeed an association between HARFA and HIV/AIDS progress by testing the bivariate correlations between these variables. Since the dependent variable is comprised of two indicators, I examine each separately. I conduct a bivariate analysis of HARFA on change rates in HIV prevalence by looking at HARFA measured in 1996 in relation to HIV prevalence change from 1997-2003 across a sample of 16 African countries. I also conduct a bivariate analysis of the

relationship between HARFA measured in 2003 and the estimated ART coverage measured in 2005 across a sample of 29 African countries.

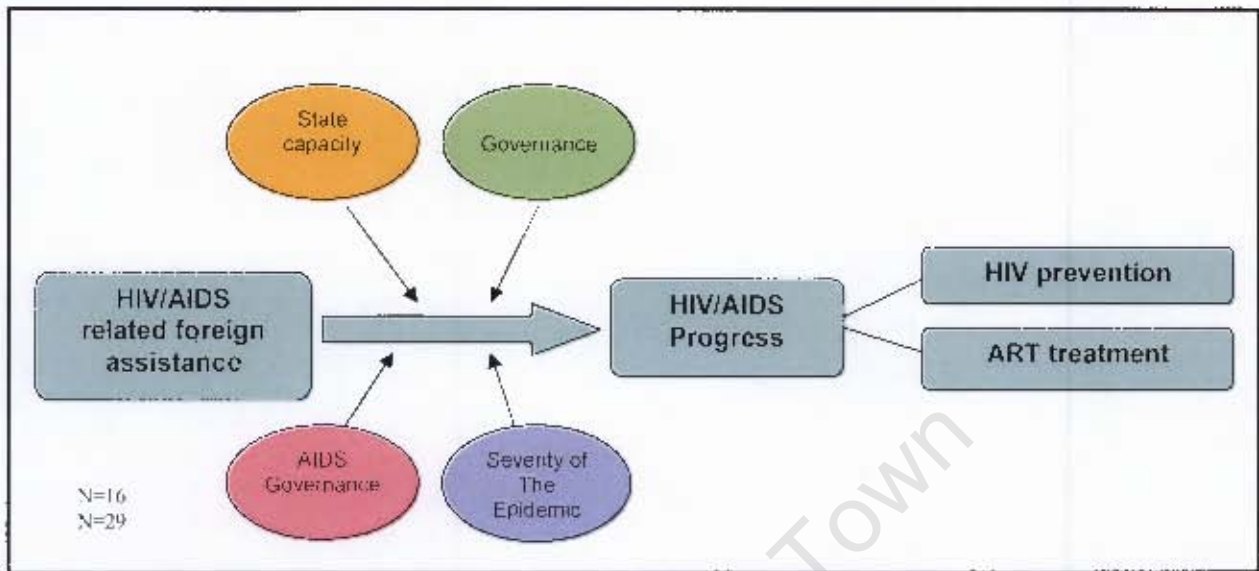
I then use multiple regression to determine if the results produced by the bivariate analyses remain after controlling for the impact of the four national characteristics identified in the literature review. These factors may not only affect the impact of HARFA on the dependent variables, but also have an independent effect on HIV/AIDS progress. If this is the case, I will be able to identify which of the factors (state capacity, governance, AIDS governance, severity or HARFA) has the strongest and most significant impact.

The last method employed in this research is interaction analysis of the impact of the national characteristics on the link between HARFA and HIV/AIDS progress. The moderating variables identified in the literature review (severity of the epidemic, state capacity, general governance, and AIDS governance) may shape the influence of HARFA on HIV/AIDS progress. This study postulates a *moderated causal relationship*. In other words, the nature of the relationship between the independent variable, HARFA, and the dependent variable, HIV/AIDS progress, is determined by national context.<sup>35</sup> Since the logic of causal order requires the independent variable to precede the dependent variables, I measure the moderating variables at the closest time point to that of the independent variable (Davis, 1985). For example, I will measure the influence of state capacity in 2003 when considering the relationship of HARFA measured in 2003 and ART access measured in 2005. Figure 1 visually displays the model employed in this study.

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<sup>35</sup> I developed the model used in this study from Jaccard and Turrisi (2003).

Figure 1: Relationship of the independent variable on the dependent variables considering the moderator variables



### 3.2 Research Questions

This study analyses the impact of HARFA on HIV/AIDS progress in Africa. The main research question posed in this study asks: *What is the impact of foreign assistance for HIV/AIDS control on HIV/AIDS progress in Sub-Saharan Africa?*

But as seen in the previous chapter, the literature review on aid effectiveness argues that the impact of foreign aid depends on the governance of the recipient state. Scholars also identify other national characteristics which may influence the epidemic and the effectiveness of the AIDS response. Thus, I need to consider the impact of these national characteristics. Therefore, I will pose a second research question that asks: *do other factors (state capacity, governance, AIDS governance, and the severity of the epidemic) modify the impact of foreign assistance for HIV/AIDS control on HIV/AIDS progress in Sub-Saharan Africa?*

### 3.3 Logic/Expectations

I expect to find that the relationship between HARFA and HIV/AIDS progress depends on the characteristics of the recipient countries. As discussed in the literature review, scholars and donor agencies recognize that certain national characteristics

(state capacity, governance, AIDS governance, and the severity of the epidemic) may influence the epidemic. The characteristics of a recipient country will most likely shape the impact of HARFA on HIV/AIDS.

It is unlikely that we will find no association at all between HARFA and HIV/AIDS progress. Sub-Saharan African countries rely on HARFA to implement AIDS prevention programmes and treatment, and recipient countries, through government, civil society and local NGOs, are ultimately responsible for how HARFA is spent and allocated. Therefore, HIV/AIDS progress will vary due to the impact of these the moderator variables. For instance, African countries that have high state capacity may be better able to absorb HARFA more effectively providing greater access to treatment. Likewise, countries that have good governance practices may have more transparency, openness and information exchanges creating more mechanisms for accountability of AIDS spending. Also, more liberal AIDS institutions and a human rights based approach to HIV/AIDS may encourage an environment conducive to an honest discourse about changing sexual behavior. Finally, countries with severe epidemics will have difficulty improving HIV/AIDS conditions even if HARFA is available; whereas, countries with lesser epidemics will be able to apply HARFA to a smaller population more effectively.

I also expect to find a reciprocal relationship amongst the variables used in this study. As discussed in the previous chapter, A. Patterson (2006) recognizes that the linkages between the national characteristic prevent us from identifying which factors are more important for responding to AIDS. Therefore, I anticipate that these factors will be highly correlated. In addition, the national characteristics will probably associate with HARFA allocations on their own as well as the two indicators of HIV/AIDS progress. These reciprocal relationships may affect the final analysis.

Finally, I expect that the two indicators of HIV/AIDS progress, HIV prevention and treatment, will differ. The link between foreign aid and treatment is more direct because money for treatment can be directly translated into medicine, health staff and educational programmes. Money for HIV prevention programmes however relies on behaviour change among individuals. While both indicators depend on a series of institutional and bureaucratic factors that need to work well to combat HIV/AIDS,

HIV prevention has additional challenges and complications that ART access need not consider. As a result, I do not expect HARFA to affect these variables equally.

### 3.4 Hypotheses

Based on the theories identified in the literature review and the above expectations, I postulate two main hypotheses. From the second hypothesis, I draw further suppositions.

- 1) There is a relationship of HARFA and HIV/AIDS progress (i.e. change rate in HIV prevalence and ART access). The relationship between HARFA on the change rate in HIV prevalence will be negative; the relationship between HARFA on ART access will be positive.
- 2) The relationship of HARFA on HIV/AIDS progress will depend on the characteristics of the recipient country.
  - a) *HIV prevention:*
    - i) The effectiveness of HARFA on *the change rate in HIV prevalence* will be greater in countries with *high state capacity* opposed to countries with *low state capacity*.
    - ii) The effectiveness of HARFA on *the change rate in HIV prevalence* will be greater in countries with better *governance* opposed to countries with poor *governance*.
    - iii) The effectiveness of HARFA on *the change rate in HIV prevalence* will be greater in countries with more idealism in *AIDS governance* opposed to countries with less idealism in *AIDS governance*.
    - iv) The effectiveness of HARFA on *the change rate in HIV prevalence* will be greater in countries with less *severe epidemic* opposed to countries with more *severe epidemic*
  - b) *ART treatment:*
    - i) The effectiveness of HARFA on *ART treatment* will be greater in countries with *high state capacity* opposed to countries with *low state capacity*.

- ii) The effectiveness of HARFA on *ART treatment* will be greater in countries with better *governance* opposed to countries with poor *governance*.
- iii) The effectiveness of HARFA on *ART treatment* will be greater in countries with more idealism in *AIDS governance* opposed to countries with less idealism in *AIDS governance*.
- iv) The effectiveness of HARFA on *ART treatment* will be greater in countries with less *severe epidemic* opposed to countries with more *severe epidemic*.

### 3.5 The Data Set

I develop a unique database with information from several sources for the purposes of this analysis. I extracted HIV/AIDS related foreign aid data for 1996 from a UNAIDS report (Ernberg, Opuni, Schwartlander, Walker, Tarantola, & Kieffer, 1999) and HIV/AIDS related foreign aid for 2003 from the Organization for Economic Cooperation and Development (OECD)/ Development Assistance Committee (DAC) dataset (2006). I gathered data on state capacity from UNDP Human Development Reports (1999, 2005); on governance from World Bank Governance reports (World Bank, 2006); and on AIDS governance from the AIDS Programme Effort Index (UNAIDS et al., 2003). For HIV prevention, I used HIV prevalence trend data from an article published in the *Lancet* (Asamoah-Odei, Calleja, & Boerma, 2004), which monitors HIV prevalence at the same antenatal clinics from 1997-2003. Finally, for treatment, ART coverage estimates were extracted from a report published by UNAIDS (2006).

It is also important that countries with different severities of the epidemic are included because HARFA is not allocated solely on the basis of HIV prevalence. For instance, in 2005 Nigeria, with 4 percent HIV prevalence, received twice as much HARFA as Lesotho, with 23 percent HIV prevalence. In this specific comparison, Nigeria may have received more funding because they actually have more HIV-positive people, 1.6 million, compared to Lesotho's 250,000. I will control for population by using HARFA per capita in my analysis.

## 3.6 Limitations and challenges

At this point, it is vital to identify some of the limitations and challenges of this study. One main challenge rests with the data set as described above. I encountered problems with the availability of accurate, complete and reliable data. Another challenge comes from the fact that there is little consensus on *how* to measure progress in combating the epidemic.<sup>36</sup> This section explains the main data concerns and other limitations of this study.

### 3.6.1 HIV Prevalence Data

One indicator of HIV/AIDS progress is HIV prevention, which in turn decreases the number of deaths due to HIV-related illness. The best indicator of this would be *HIV incidence*, which refers to the annual rate of new infections (de Waal, 2006, p. 109). However, HIV incidence is difficult to measure.<sup>37</sup> Due to this limitation, UNAIDS prefers to use HIV prevalence among young men and women (15-24) as a proxy for HIV incidence. This UNGASS indicator is not yet available over time for a trend comparison. Therefore, I gauge HIV prevention as the rate of change in HIV prevalence.

*HIV prevalence* can be defined as the percentage of a population estimated to be HIV positive at any given point. Adult HIV prevalence, or “people living with HIV”, considers the overall population while accounting for new infections and AIDS deaths. Ideally, a year-on-year average change of adult HIV prevalence would allow us to consider the speed of HIV diffusion and the averaged lag time between HIV infection and AIDS death.<sup>38</sup> However, yearly adult HIV prevalence data is unavailable for most countries in Sub-Saharan Africa preventing a year-by-year analysis.

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<sup>36</sup> Goal 6, target 7 of the MDGs is to “have halted by 2015 and begun to reverse the spread of HIV/AIDS.” The MDG indicator used to monitor the new infection rate in a population is the HIV prevalence among pregnant women aged 15-24 (WHO, 2005). However, the WHO recognizes that “currently, not enough data are available to provide a full trend analysis for this indicator” (2005, p. 20).

<sup>37</sup> Since HIV/AIDS is a long-wave disease, people often do not know their status until years after being infected (Barnett & Whiteside, 2006). Incidence rates are calculated by using prevalence rates from the target year to five years past the target year (UNAIDS, 1999); incidence data is only available until 2001.

<sup>38</sup> This methodology was used by Kennedy in her mini-dissertation (2006).

Nevertheless, adult HIV prevalence data has been systematically collected by countries since the onset of the epidemic. While country reports vary in quality, UNAIDS compiles the data into bi-annual reports (UNAIDS, 1999, 2004b, 2006). I collected bi-annual HIV data from these reports, which contain data for 1997, 1999, 2001, 2003, and 2005. Upon closer examination of the data, it is clear that variation in the baselines and other methodological differences prevent trend comparisons of different UNAIDS' global reports.

Due to the limitations of data from UNAIDS, I analyze HIV prevalence trends in pregnant women attending antenatal clinics. Asamoah-Odei and his colleagues (2004) published results of a trend series study whereby they assess HIV prevalence and trends in Sub-Saharan Africa.<sup>39</sup> They use data from the same antenatal clinics in 23 countries from 1997-2003. There are some limitations of using this study. First, the number of clinics observed in each country varies. For example, they used 66 clinics in Nigeria but only 5 in Burkina Faso. Second, they combine data or provide an average for the first four years of the study, 1997-1998 and 1999-2000, rather than reporting annually in order to increase the sample. For consistency purposes, I take the average HIV prevalence of 2001, 2002 and 2003. Third, it is not a representative sample of the population. Antenatal clinics collect data from pregnant woman aged 15-49 years however the women attending these clinics may not be representative of all pregnant women in the country. Finally, their yearly estimates have overlapping confidence intervals, which makes a trend comparison speculative.

In addition to the limitations of the Asamoah-Odei et al study, there are other weaknesses when using the change rate of HIV prevalence. The complexity of the epidemiological features of HIV/AIDS makes measuring the level and flow of the epidemic difficult. One might consider the type of virus, HIV 1 or HIV 2,<sup>40</sup> or one could consider the population infected. Some countries experience HIV infection in localized populations (commercial sex worker, IV drug users or homosexuals)

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<sup>39</sup> The WHO also did a trend study but the baseline measurement (i.e. the number of antenatal clinics used) varied yearly creating methodological concerns about the data reliability (Asiimwe-Okiror, Ntabangana, Asamoah-Odei, & Calleja, 2005).

<sup>40</sup> HIV-1 accounts for 98 percent of all HIV infection in Africa. It is the variation of HIV subtypes (group M, group O and group N) that differs among African countries (Asiimwe-Okiror et al., 2005).

opposed to the general population. The population infected with HIV/AIDS can determine HIV/AIDS progress, HARFA allocations, and severity of the epidemic.

We also know that reduction in HIV prevalence takes a long time.<sup>41</sup> With an increase of ART access and use, HIV prevalence may actually increase due to the combination of new infections and the longer life span of the current HIV-positive population. ART roll-out drastically improved throughout the region only after 2001 due to increased funding. The upsurge of treatment will minimally influence the change of HIV prevalence for this study because the Asamoah-Odei et al report concludes in 2003. In addition, a decline in HIV prevalence does not tell us whether rates are decreasing due to AIDS deaths or due to emigration nor does it consider that countries may be at different levels of the epidemic (Barnett & Whiteside, 2006). The difficulty of epidemiologically monitoring the progression of the HIV/AIDS epidemic presents many challenges for scholars, donors and institutions (UNAIDS, 1999). Despite the many weaknesses of using the change rate of HIV prevalence as an indicator, it is the best data available.

### ***3.6.2 HIV/AIDS related foreign assistance data (HARFA)***

The complexity of foreign aid is vast and difficult to measure. Foreign aid is fed through multiple channels for different purposes, and donors can include bilateral and multilateral funding agencies, private foundations, grant-making institutions, or corporate philanthropy. As Natrass points out “donor assistance takes many forms, ranging from direct transfers to government (World Bank), to developing close partnerships with governments (for example, Médecins Sans Frontières’ support for government clinics in Khayelitsha, Cape Town) or to setting up separate operations with faith-based organizations (as is often the case with PEPFAR-funded projects” (2006, p. 327). The conceptual and operational framework of foreign aid presents many challenges as it is difficult to trace in its entirety.

For this study, HIV/AIDS related foreign aid, HARFA, is measured as official development assistance (ODA) given specifically for HIV/AIDS control as recorded

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<sup>41</sup> For more information about the specific case of Uganda’s efforts in reversing the HIV/AIDS epidemic please see de Waal (2006, pp. 108-110).

by major donors through the Organization for Economic Cooperation and Development (OECD)/Development Assistance Committee (DAC). There are several limitations to this measurement of HARFA. Firstly, measures of foreign assistance track what donor countries report giving and not how much aid goes directly to poverty reduction, relief, or HIV/AIDS programming through developing countries' national budgets or NGO sectors. A UNAIDS study tracking HARFA demonstrates that what countries report receiving often differs from what donors report giving (Ernberg et al., 1999). However, poor national accounts data with regard to public health and HIV/AIDS,<sup>42</sup> force me to measure funds committed by donors rather than funds dispersed.<sup>43</sup>

A second limitation stems from the fact that ODA includes things like payments to US based consulting organizations, debt cancellation grants (which is not new money but the subtraction from what was owed), emergency assistance (which often has a higher cost of transportation than normal aid), technical assistance and small donor "pet projects" (Sachs, 2005b, p. 80). We must therefore recognize that according to my definition of HARFA, the money and resources reported by OECD/DAC are not entirely going directly to recipient countries. It can also be assumed that there is variation of aid allocations within countries. While a more expensive analysis should attempt to control for this variation, it lies beyond the limits of this thesis.

A final limitation of this measure of HARFA is that it excludes private and nongovernmental aid. Yet despite a recent increase of private donors like the Gates Foundation, Figure 2 demonstrates that official bilateral aid still comprises the lion's share of resources to HIV/AIDS. Sachs claims that "for many African countries, ODA is still the largest source of external financing and is critical to the achievement of the development goals and targets of the Millennium Declaration and other internationally agreed development targets" (Sachs, 2005a, pp. 217-218). With the advancement of bilateral aid initiatives such as PEPFAR, it can be assumed that ODA

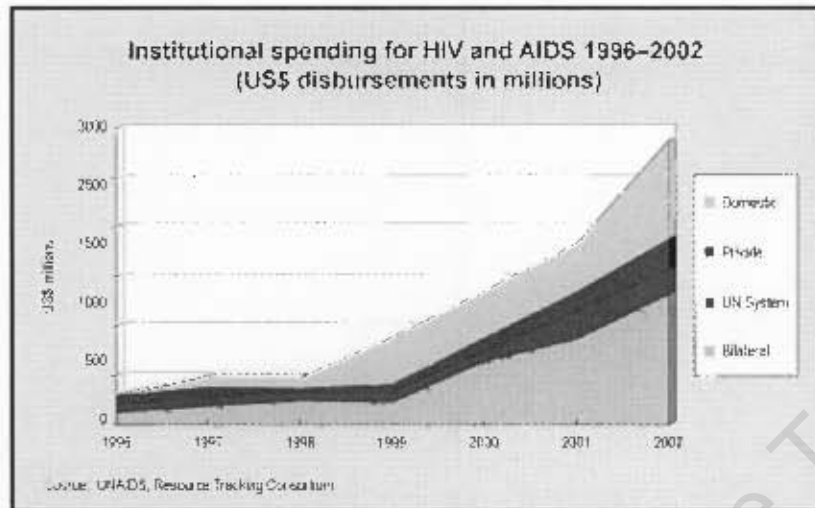
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<sup>42</sup> Many African countries have not conducted National Health Accounts or systematic studies to estimate health spending on HIV/AIDS (Levine & Blumer, 2004).

<sup>43</sup> The Centre for Economic Governance and AIDS in Africa is currently training and implementing HIV/AIDS budget tracking programmes in many African countries in order to improve this data. Countries will be reporting on this indicator for the UNAIDS 2008 Global AIDS Report.

committed to HIV/AIDS control, e.g. prevention, treatment, and care, continues to be the best indicator of HARFA in Africa (OECD/DAC & UNAIDS, 2004).

Figure 2: Institutional spending for HIV/AIDS 1996-2002 (OECD/DAC & UNAIDS, 2004)



### 3.6.3 Other Data

Data accuracy for the other variables is another major challenge to this study. Information and data exist, however they are controversial and flawed. Estimates are only as accurate as the data they build on and as realistic as the assumptions used. For example, the quality of country reporting may vary across countries resulting in incomparable data. In addition, the information available relies on survey data acquired by governments, research units, or international institutions. Research methods and sample size often differ resulting in different measurements for the same indicator.

ART coverage is a prime example of data reporting variation. In the UNAIDS 2006 *Report on the Global AIDS Epidemic*, there are three measurements listed for ART access. The first column reports the UNGASS indicator which is ART coverage as reported by the country. The second column provides data reported by the WHO's "3 by 5" programme.<sup>44</sup> The final column presents data collected by an independent ART coverage survey. When these different measures are compared, one can identify some

<sup>44</sup> This programme sought the goal of providing 3 million people with ART by 2005.

## **CHAPTER FOUR**

### **CONCEPTUAL AND DESCRIPTIVE FRAMEWORK**

In this chapter, I give HIV/AIDS related foreign assistance (the independent variable), HIV/AIDS progress (the dependent variable), and the moderator variables specific and operational definitions. I then analyze each variable separately before finally addressing the relationships amongst them. How do we measure HIV/AIDS progress? What types of foreign aid should be included in the study? Are countries generally of the same levels of wealth? Do they experience differing qualities of governance? What is the general level of idealism in responding to the epidemic? Does the epidemic vary across the 29 countries?

The first part of this section will address HIV/AIDS progress. Second, we will look at aid in support of HIV/AIDS as the operationalization of HARFA. Finally, we will unpack the moderator variables.

#### **4.1 The dependent variable: HIV/AIDS progress**

HIV/AIDS progress can be conceptualized in two ways. The first refers to policy development of the “best practice” guidelines produced by UNAIDS for an effective response (Lieberman, 2005).<sup>45</sup> An alternative conceptualization understands HIV/AIDS progress in epidemiological terms: reducing HIV prevalence, providing treatment and care, and reducing risky behavior. For this study, I define HIV/AIDS progress as positive change in the epidemic itself and the actual outcome of what governments and other stakeholders are doing about the epidemic. My attention is on the epidemic by means of prevention and treatment, which is in part an outcome of HIV/AIDS policies. I will focus this study on two variables: HIV prevention and HIV treatment.<sup>46</sup> I will define each of these concepts and operationalize the terms using the

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<sup>45</sup> Donors (i.e. the G8, the World Bank and UNAIDS) produced a national AIDS response template modeled from the successful responsive programs in Uganda and Senegal in order to monitor national AIDS responses (Lieberman, 2005)

<sup>46</sup> I have left behavior change out of this study due to data limitations.

best data available to me. Where possible, I have tried to use the HIV/AIDS indicators identified by the MDGs in order to generalize this study for future research.<sup>47</sup>

#### ***4.1.1 HIV prevention***

I measure the HIV prevention variable as the average bi-annual growth rate of antenatal clinic (ANC) HIV prevalence in a country. To calculate the change rate of HIV prevalence, I measure bi-annual on bi-annual ANC HIV prevalence growth since 1997 (the first available HARFA data is from 1996). Examining HIV trends subsequent to the independent and moderator variables, causal time-order is established allowing us to examine causality (Davis, 1985).

HIV prevention will be measured by the average bi-annual rate of change in HIV prevalence from 1997-2003. A country that experiences a reduced or decelerated HIV prevalence will be considered as having HIV/AIDS progress rather than a country with an increased and accelerated rate of HIV prevalence. Asamoah-Odei and his colleagues provide ANC HIV prevalence trend data for 16 countries (Appendix A).<sup>48</sup> They combine data for 1997 and 1998 as well as 1999 and 2000 providing five time points. I calculated the average of 2001, 2002, and 2003 to make the data more comparable over time.

Figure 3 illustrates line graphs of national rates of change in HIV prevalence from 1997-2003. Figure 4 shows the average percentage change. For the most part, the surveyed antenatal clinics within the sample experience little change in HIV prevalence. Botswana, Mozambique and Namibia experienced increases of HIV prevalence; whereas Uganda and Kenya experienced the greatest declines in HIV prevalence. Malawi, Tanzania and Zimbabwe have initial increases and then considerable decreases of HIV prevalence resulting in a small overall percent change. From Figure 3, we can also see the different initial HIV prevalence across the 16 countries.

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<sup>47</sup> In addition to the MDGs that are highlighted in this paper, the MDG for HIV/AIDS also considers orphans and vulnerable children as an indicator. I have excluded this indicator not because I think it is unimportant but rather to minimize this study for a master's level thesis.

<sup>48</sup> The study actually provides information for 23 countries however HARFA 1996 data only overlaps with 16 countries, which reduces the sample size (Asamoah-Odei et al., 2004).

discrepancies in the reporting of ART coverage. I use the WHO data for this study because it reports on the most countries and is used by Natrass (2006).

The World Bank governance indicators provide an example of data inaccuracy because these measures have large margins of error causing an overlap of governance measures in many African countries. Daniel Kauffman, Director of Global Governance at the World Bank Institute, and Aart Kraay, Lead Economist in the World Bank's Research Group, acknowledge that governance is difficult to measure and is not fully reliable, but they defend their method used to determine governance indicators. Kraay says, "A key feature of our governance indicators is that we make every effort to be transparent about the degree of imprecision... Because we aggregate information from many different data sources, our indicators are more informative than any individual data source" (World Bank, 2006). Consequently, World Bank Governance Indicators are the best to measure levels of governance despite the flaws.

#### ***3.6.4 Number of Cases***

A final limitation of my study is the number of cases. My first analysis of HARFA and the HIV prevention analyses 16 countries: Botswana, Burkina Faso, Congo DR, Cote d'Ivoire, Ethiopia, Ghana, Kenya, Malawi, Mozambique, Namibia, Nigeria, Senegal, Tanzania, Uganda, Zambia, and Zimbabwe. The second analysis of HARFA and ART access considers 29 countries, which include the previous countries and adds: Angola, Benin, Burundi, Cameroon, Chad, Congo, Lesotho, Madagascar, Mali, Rwanda, South Africa, Swaziland and Togo. These countries are chosen based on data availability and are not intended as a representative sample of the African continent. Thus, I will not make general claims about HARFA across the continent, but rather explain the situation of these 29 countries.

Figure 3: Change rate of HIV prevalence at same antenatal clinics 1997-2003

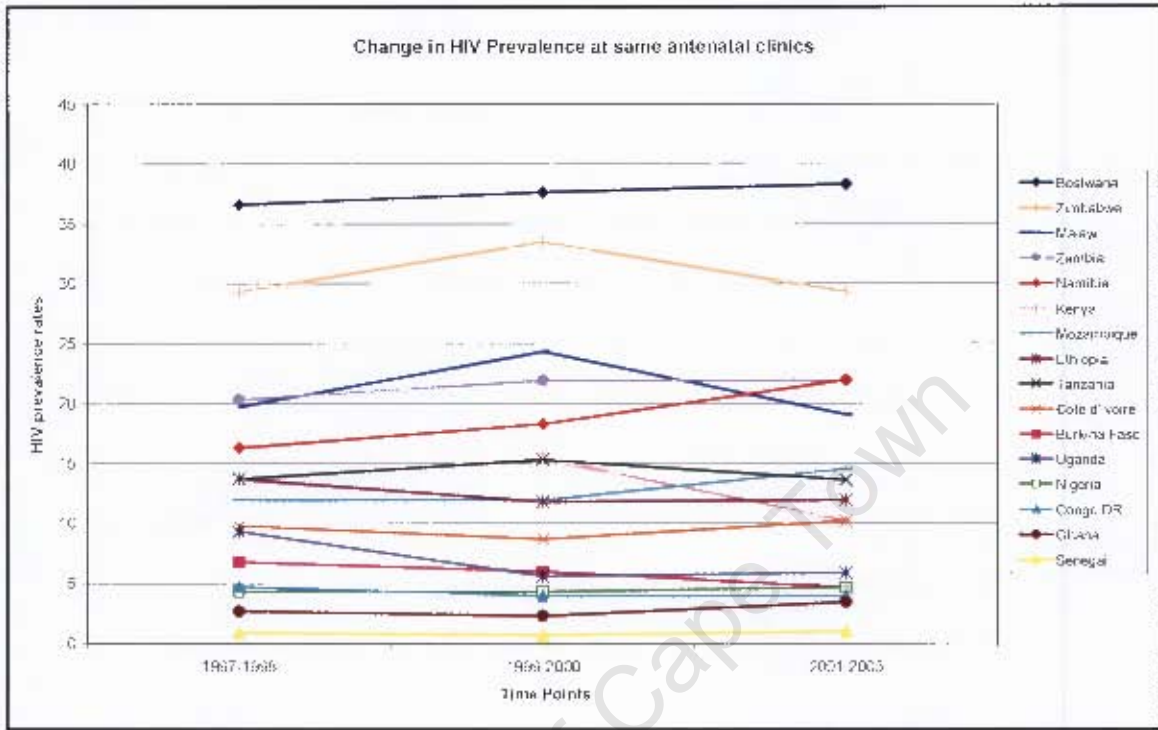
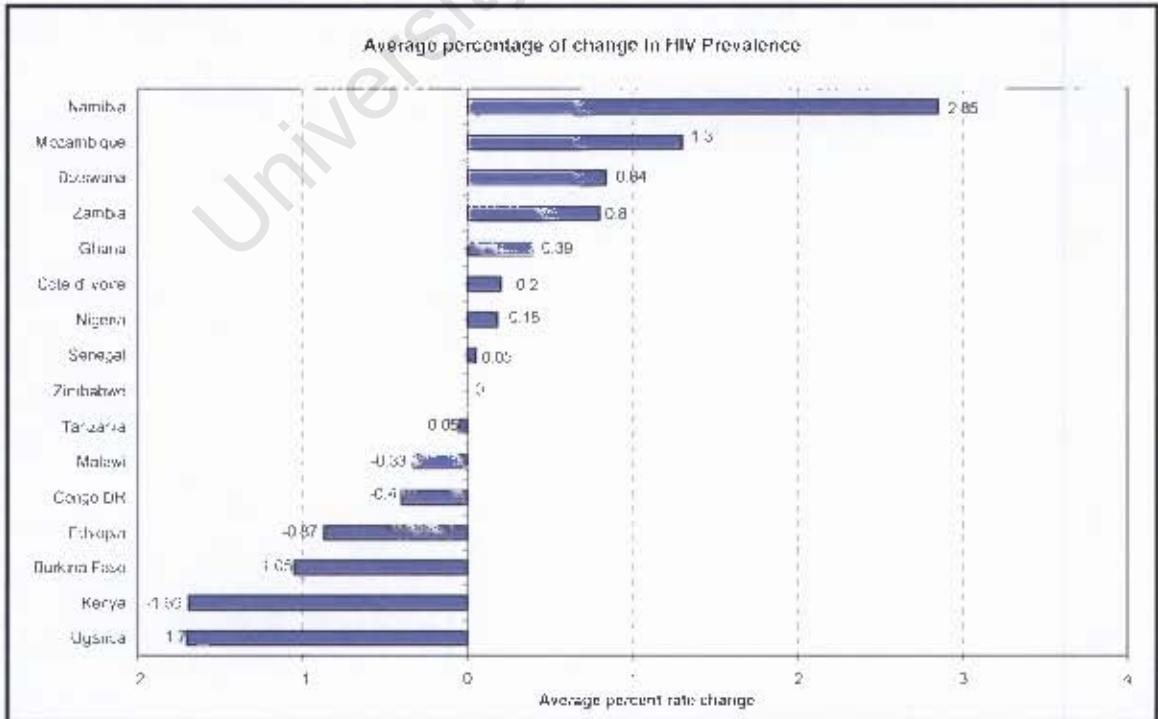


Figure 4: Average percentage of change in HIV prevalence at same antenatal clinics from 1997-2003



#### ***4.1.2 HIV treatment***

My second indicator of HIV/AIDS progress consists of access to HIV treatment. I measure this second dependent variable as the estimated antiretroviral therapy (ART) coverage as of December 2005. Generated by UNAIDS and WHO, these estimates calculate the “number of people with advanced HIV infection who receive antiretroviral combination therapy in accordance with the nationally approved treatment protocol (or WHO/UNAIDS standards)” (UNAIDS, 2006, p. 584). In other words, ART coverage refers to the estimated percentage of people with high levels of HIV, most likely with symptomatic AIDS-related illnesses, who have access to antiretroviral medicine. Another way to think about this variable is treatment provided as a percent of the demand. Even though it does not distinguish between the types of treatment or the cost of the treatment, it is the best available indicator to compare ART access cross-nationally.

Unlike herbal or medicinal treatment for HIV/AIDS, ART has been medically proven to reduce the HIV viral load in a person living with HIV/AIDS allowing a person to live longer (Gallo et al., 2006).<sup>49</sup> Access to ART is crucial to preventing the spread of the epidemic, especially mother-to-child transmission.<sup>50</sup> Treatment transforms HIV/AIDS from a “death sentence” to a manageable chronic illness. African countries that provide more treatment to people who need it experience more HIV/AIDS progress than countries that provide little treatment.

Figure 5 presents the level of ART access in the 29 African countries. The mean is 24 percent suggesting that a fourth of the people living with AIDS in these countries receive treatment; or in other words half of the countries satisfy less than a quarter of the demand. Two countries, Botswana and Namibia supply far more ART access to people living with high levels of HIV infection than the rest of the sample (twenty

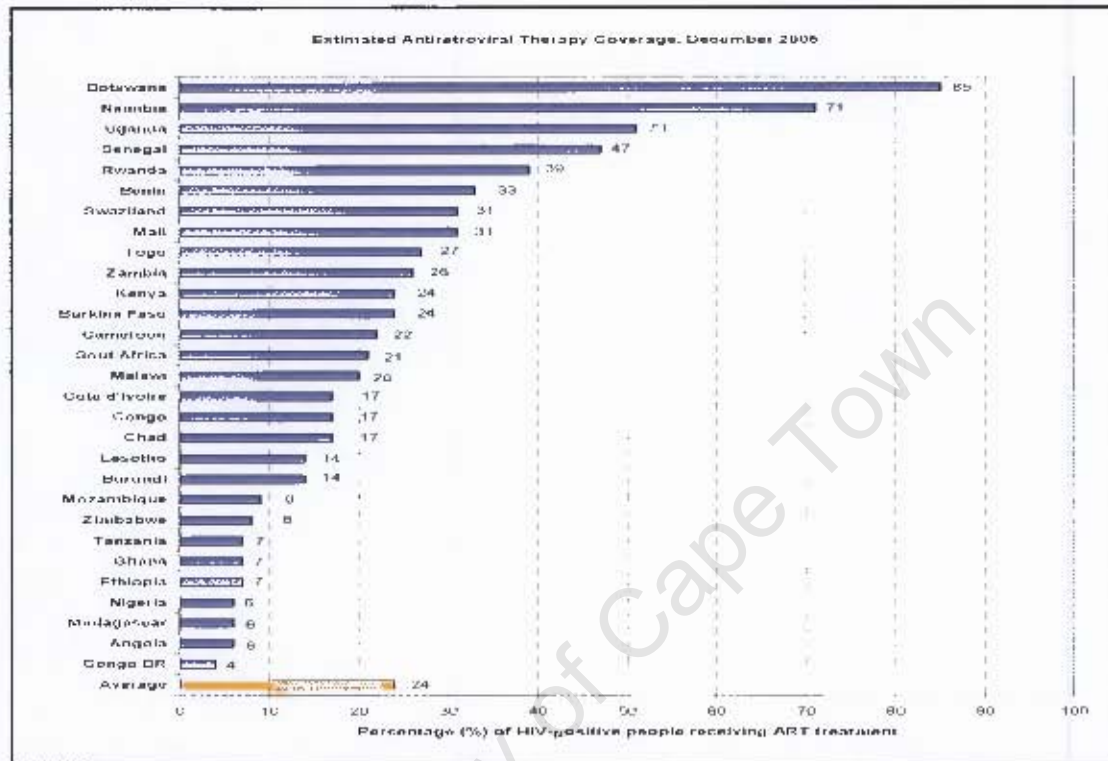
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<sup>49</sup> For further information about this debated issue, please see Farber (2006) and Gallo et al. (2006).

<sup>50</sup> Goal 8, target 17 of the MDGs indirectly addresses access to HIV/AIDS treatment, “in cooperation with pharmaceutical companies, provide access to affordable essential drugs in developing countries” (WHO, 2005).

percent more than the next highest country). Due to these extreme cases, I transform the data by taking the logarithm of the measurements (Log ART).<sup>51</sup>

Figure 5: Estimated Country Level ART Coverage



## 4.2 The independent variable: HIV/AIDS related foreign assistance (HARFA)

I define HIV/AIDS related foreign aid, HARFA, as Official Development Assistance (ODA) given specifically for HIV/AIDS control as recorded by major donors. Under this definition, the major donors are the 22 member countries of the OECD/DAC, which comprises the wealthy governments of the Asia Pacific, North America, and Western Europe in addition to agencies like the European Commission, regional development banks, the World Bank, and the UN. These donors provide both direct bilateral funding, such as PEPFAR, and multilateral funding through agencies like the Global Fund. As discussed in the previous chapter, there are limitations of using ODA specific to HIV/AIDS; however currently this is the best available data.

<sup>51</sup> Logarithmic transformations are used when there are “badly skewed distributions – in which many of the observations are clustered together combined with a few outlying values on the scale of measurement” (Tuft, 1974, p. 108). The transformation spreads out the cluster and pulls the large values toward the middle of the distribution.

The OECD/DAC monitors and tracks all ODA from states. ODA systematically measures the sum of grants and loans given to developing countries by developed countries to promote economic development and welfare. It excludes military aid but includes grants such as PEPFAR and the Global Fund. The OECD/DAC maintains a transparent database called the Creditor Reporting System (CRS) that tracks and reports aid flows. The database includes foreign aid commitment and disbursement summarized by country (donor or recipient), year, or purpose on aid (the development target). This data source has previously been used by Powell-Jackson, Borghi, Mueller, Patouillard, and Mills (2006), who use the CRS database to track ODA for health activities which benefit maternal, newborn and child health in order to assess progress of the MDGs for child and maternal health. The logic that countries receiving more donor assistance, as measured by CRS, specific to a health problem (i.e. maternal and child health or HIV/AIDS) will produce better health outputs is the bases for using ODA as a measure of HARFA.

I use information reported by the OECD/DAC on ODA for HIV/AIDS control to operationalize HARFA. I consider the impact of HARFA at two time points: 1996 and 2003, to analyze the impact of HARFA in 1996 on change rate of ANC HIV prevalence from 1997-2003 (hypothesis 1) and the impact of HARFA in 2003 on ART access in 2005 (hypothesis 2). The 1996 HARFA data is extracted from a report published by UNAIDS and the Harvard School of Public Health called “Level and Flow of National and International Resources for the response to HIV/AIDS, 1996-1997” (Ernberg et al., 1999). However this report only includes nineteen Sub-Saharan African countries, sixteen of which overlap with the sample from HIV prevalence trend report. I collect data for HARFA in 2003 from the CRS database called “HIV/AIDS Aid Activities”, which tracks ODA and other public sector aid specific to HIV/AIDS control (OECD/DAC, 2006).<sup>52</sup> The amount of foreign aid received for HIV/AIDS control considers all aid flows from all OECD donors (as recorded by donors). Since data is available from 2000-2005, I take an annual average 2003-2004 in order to provide a more accurate figure of ODA for HARFA (please refer to

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<sup>52</sup> For an analysis of the quality of HIV/AIDS data from the OECD/DAC/CRS database, please refer to OECD/DAC and UNAIDS (2004).

Appendix B).<sup>53</sup> I assess HARFA as a per capita measure to control for the population size variation, which permits a more general comparison between countries.

Figure 6 and Figure 7 chart HARFA data across the countries I will analyse in this study. The difference in HARFA per capita between the time points reflects the increase of HARFA in the past decade. In 1996, countries received an average of twenty-five cents (US) per person for HIV/AIDS related assistance whereas they received almost four dollars (US) per person by 2003. Also, the 2003 data shows the influence of PEPFAR on HARFA. The majority of the countries in the top half of the sample represent PEPFAR “focus” countries.<sup>54</sup> To recall from chapter two, these countries receive significantly more bilateral foreign aid for HIV/AIDS from the US than non-focus countries.

As with most foreign aid studies, I take the logarithm of the HARFA per capita measurements (Log HARFA 1996 and Log HARFA 2003) due to the unequal distribution of the measurements.

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<sup>53</sup> Appendix B also provides regional trends of HARFA. From these graphs, it is clear that HARFA changes drastically year to year in many countries, and an average of the two years is the better indicator for HARFA.

<sup>54</sup> The PEPFAR focus countries are Botswana, Cote d’Ivoire, Ethiopia, Ghana, Haiti, Kenya, Mozambique, Namibia, Nigeria, Rwanda, South Africa, Tanzania, Uganda, Vietnam, and Zambia.

Figure 6: 1996 HARFA per capita

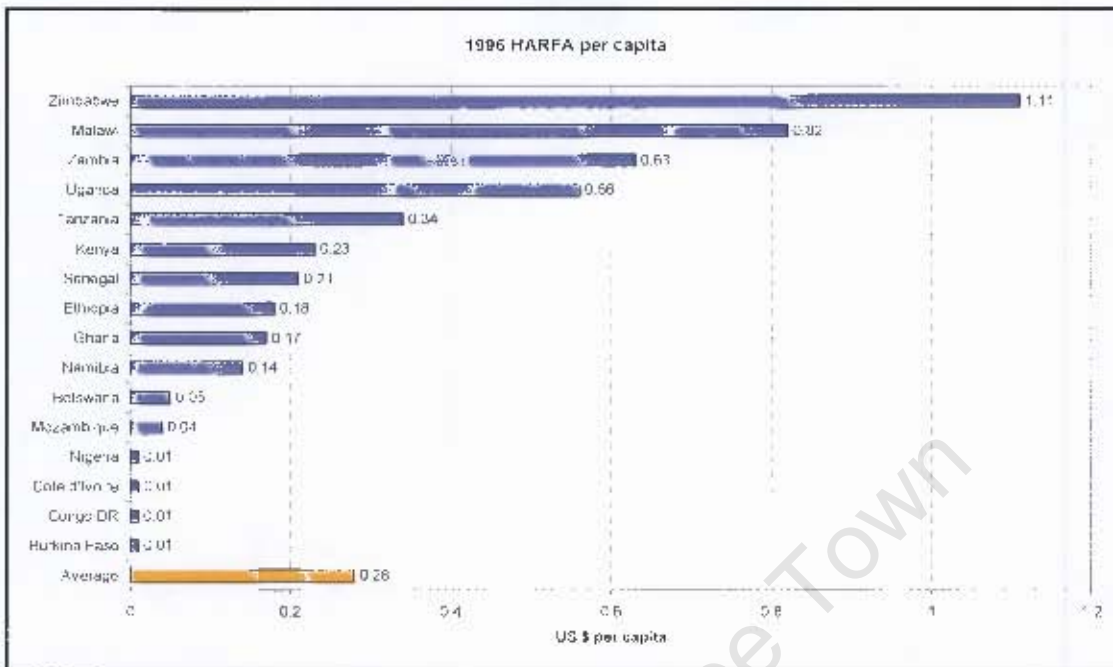
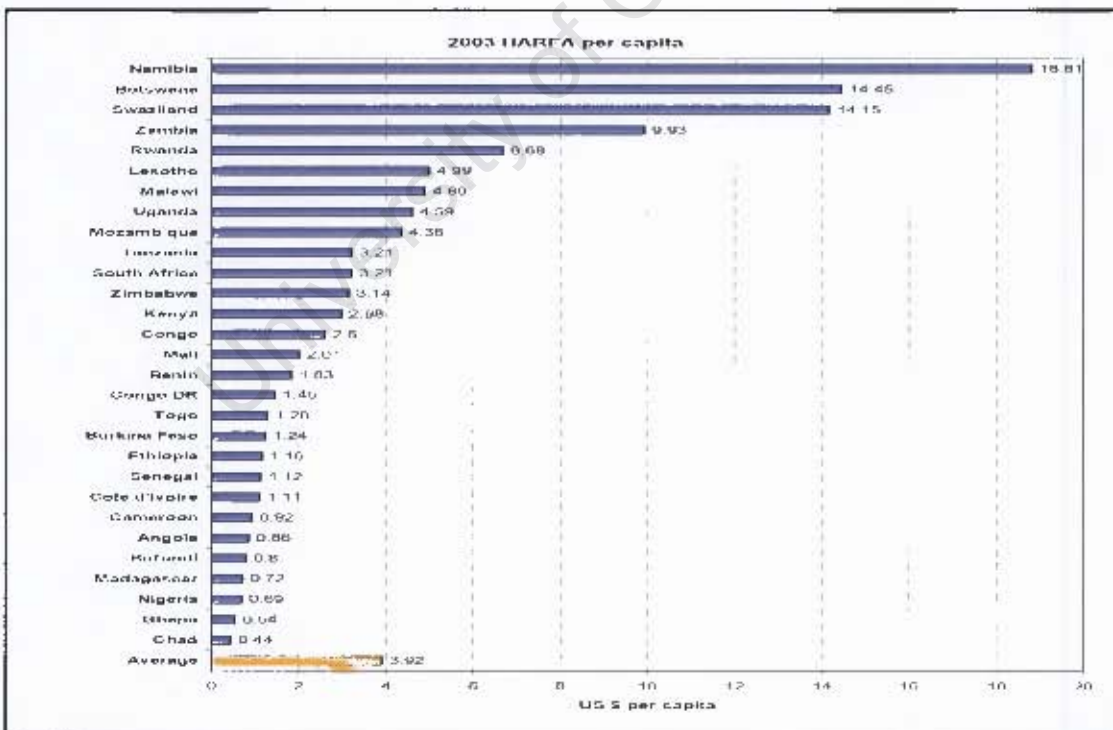


Figure 7: 2003 HARFA per capita



### 4.3 The moderator variables: national characteristics

Ideally, we would like to assume that more HARFA produces better HIV outcomes. However, the literature cites several national characteristics that may influence this relationship, i.e. state capacity, governance, AIDS governance, and severity of the epidemic. These contextual or moderator variables also need specific definitions and measurements. In this section, the four contextual variables will be conceptualized and operationalized.

#### 4.3.1 State Capacity

Price-Smith and his colleagues explore the effect of state capacity on HIV incidence and find that countries with higher levels of state capacity experience a reduction in HIV incidence (2004). Borrowing from other scholars, they define state capacity as a “country’s ability to maximize its prosperity and stability, to exert *de facto* and *de jure* control over its territory, to protect its population from predation, to extract resources, to regulate social relationships, and to adapt to diverse crises” (2004, p. 152). State capacity refers to the ability of a government to satisfy its national needs; which in Sub-Saharan Africa, includes the need to control HIV/AIDS. While the relationship between public health and state capacity can work in both directions (studies also demonstrate that HIV/AIDS limits state capacity)<sup>55</sup>, the focus of this study is concerned with the influence of state capacity on the relationship between HARFA and the HIV/AIDS epidemic.

State capacity aims to capture the actual ability of a country in terms of economic strength, infrastructure, social capital, and provision. There are multiple indicators that would conceptualize this variable such as: Gross Domestic Product (GDP) per capita, gross school enrolment, health expenditure per capita, access to communication, distance from nearest health facility, quality of roads and number of doctors per 1,000 people. It would be expected that countries with more wealth, higher health spending, more doctors, better education and information sharing would

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<sup>55</sup> For example, Manning (2003) examines the impact of HIV/AIDS on a highly infected municipality in KwaZulu-Natal, South Africa, where she determines that HIV will negatively affect the local government’s capacity to govern and provide services. Please refer to Barnett and Whiteside (2006) and de Waal (2006) for a discussion of other impact studies.

experience greater HIV/AIDS progress. I attempted to create an index of these variables to mirror the study done by Price-Smith et al. (2004) however I encountered problems when collecting data for the 29 country sample. I did however collect data on GDP per capita, health expenditure per capita, physicians, school enrolment and phone subscribers. Even though these variables are highly correlated, the different forms of measurement and the use of logarithm transformations for some but not all of the variables prevented me from using a workable index for this variable.<sup>56</sup>

Previous studies use GDP or Gross National Income (GNI)<sup>57</sup> per capita in their analysis of AIDS responses (Bor, 2007; Lieberman, 2007; A. Patterson, 2006; Natrass, 2006). GDP per capita measured at PPP (purchasing power parity) reflects the economic activity of a country and resources available to the population. GDP per capita also indicates the level of development or living standards of people in the developing country. My intention is not to ignore the complexity of state capacity but to provide an uncomplicated measure for this variable. Therefore, I operationalize state capacity with GDP per capita.

I collect data for this variable from Human Development Reports (UNDP, 1999, 2005).<sup>58</sup> Since the interest of this variable is the capacity of the state to absorb and use HARFA, I consider the year in which the aid was received. I measure state capacity according to the two HARFA time points: 1996 and 2003. Figure 8 and Figure 9 show the range of GDP across the countries in this study for the two time points. Botswana, Namibia and South Africa have the highest levels of state capacity; whereas Malawi and Tanzania consistently remain with the lowest levels. The average GDP per capita ranges around US\$ 2,000 for both time points.

The GDP per capita variables are transformed to logarithms (Log GDP per capita 1996 and Log GDP per capita 2003) due to the extreme cases that skew the data. We can recognize that this variable requires transformation because the mean is

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<sup>56</sup> The GDP (PPP) variable and the public health expenditure variable are measured in per capita and would need to be logged; the gross enrolment in primary school is a percentage, and the telephone and physicians variables are ratio measurements.

<sup>57</sup> GNI includes external resource flows including donor assistance. In order to capture country level wealth separate from foreign aid, I use GDP for this study.

<sup>58</sup> I used different Human Development Reports for the different years of the study. For example to measure state capacity measured at 1996, I used GDP per capita at 1997 (HDR, 1999).

exaggerated by the few countries with much higher state capacity, namely South Africa, Botswana, Namibia and Swaziland.

Figure 8: State Capacity 1996

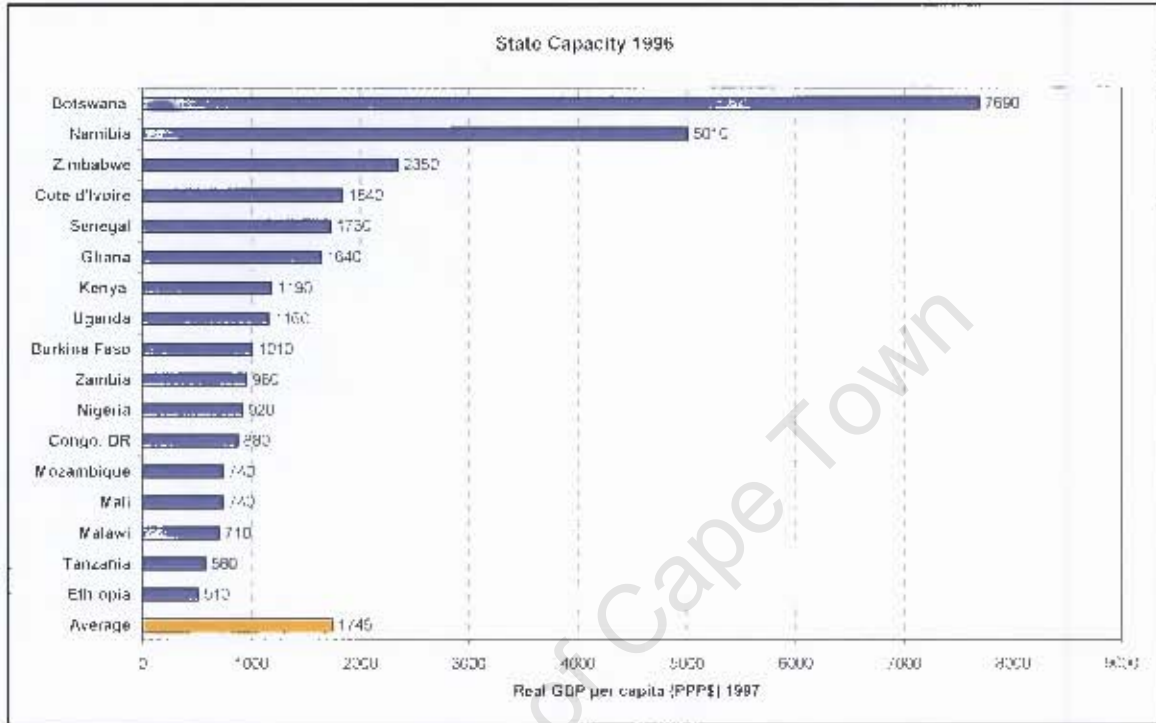
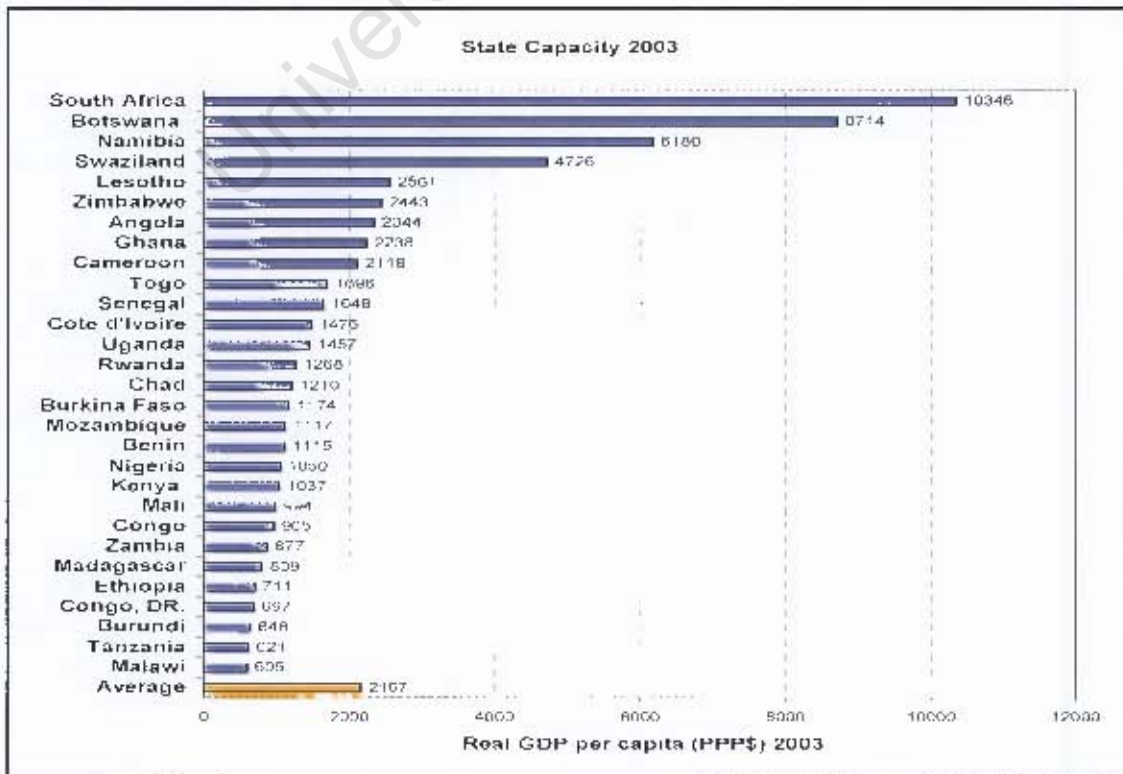


Figure 9: State Capacity 2003



### 4.3.2 Governance

Scholars, such as Hsu (2005) and D. Patterson (2001), acknowledge the importance of good governance for an effective AIDS response. Both Nattrass (2006) and Halperin et al. (2005) empirically demonstrates that more democratic governments provide greater ART coverage and experience lower HIV prevalence (respectively). In addition, donor agencies are influenced by the quality of a country's governance when they make decisions about investing in development because they believe that development assistance works best when it is targeted towards countries with relatively sound and/or improving policies and institutions (Kauffman & Kraay, 2002).

Governance can be defined as “a set of values, policies and institutions by which a society manages its economic, political and social processes at all levels through interaction among government, civil society and private sector” (Cheema, 2000). It describes political systems and the interactions among the players within that system and not the system itself. In an attempt to link good governance to economic growth and positive development, the World Bank developed six indicators measuring different aspects of governance across countries:

- *Voice and Accountability*—a measure of political, civil and human rights
- *Political Stability and Absence of Violence*—measures the threat of extra-legal challenges to the state.
- *Government Effectiveness*—measures the efficiency and competence of the public bureaucracy.
- *Regulatory Quality*—measures the presence of market-unfriendly policies and the extent of government regulation of markets.
- *Rule of Law*—a measure of the respect for contract and property rights; and includes crime rates.
- *Control of Corruption*—measures the “exercise of public power for private gain” (Kauffman & Kraay, 2002).

For all six indicators, higher scores indicate better governance outcomes. I use these World Bank indicators to operationalize the governance variable.

The World Bank uses the indicators to grade countries on a scale from -2.5 to 2.5, with higher values corresponding to better governance outcomes (Kauffman & Kraay, 2002). Theoretically, it would be expected that governments rank similarly on these different indicators of governance based on the type of regime in power and other factors specific to the country (i.e. conflict or stability). This theory can be supported empirically. The correlations among the governance variables are strong indicating a relationship amongst them (see Appendix D for the data sets). Factor analyses and reliability tests also confirm that the inter-correlations among these variables are sufficient for the creation of indices.<sup>59</sup> As a result, these variables can be reduced into two governance indices that measure general national governance over the two time points: 1996 and 2003.

The Governance Indices rank countries according to political freedoms, stability, and delivery of services. Figure 10 and Figure 11 show the wide range of governance scores in Sub-Saharan Africa at the two time points. Botswana and Namibia rank the highest on the governance scale while the DRC scores the lowest. Zambia is the closest to the sample average, which is -0.6. For some countries, the governance levels remain similar over time; however there are many exceptions such as Zimbabwe, Burundi, Benin, and Cote d'Ivoire.

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<sup>59</sup> For the factor analyses of the Governance Indices, I used the maximum likelihood extraction and direct oblimin rotation. The 1996 Governance variables produce an Eigenvalue of 3.797 explaining 63.3% variance. The reliability test shows a Cronbach's Alpha of .869. The 2003 Governance variables generate an Eigenvalue of 4.918 explaining 82% variance. The reliability test produces a Cronbach's Alpha of .947.

Figure 10: Governance Index 1996

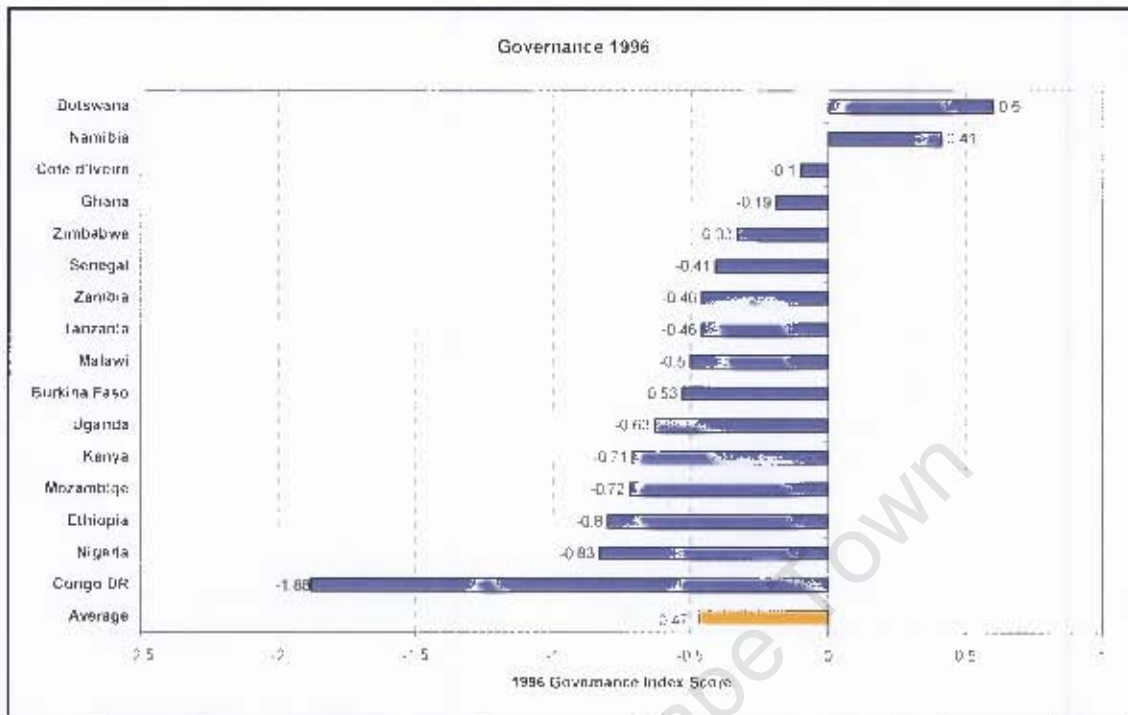
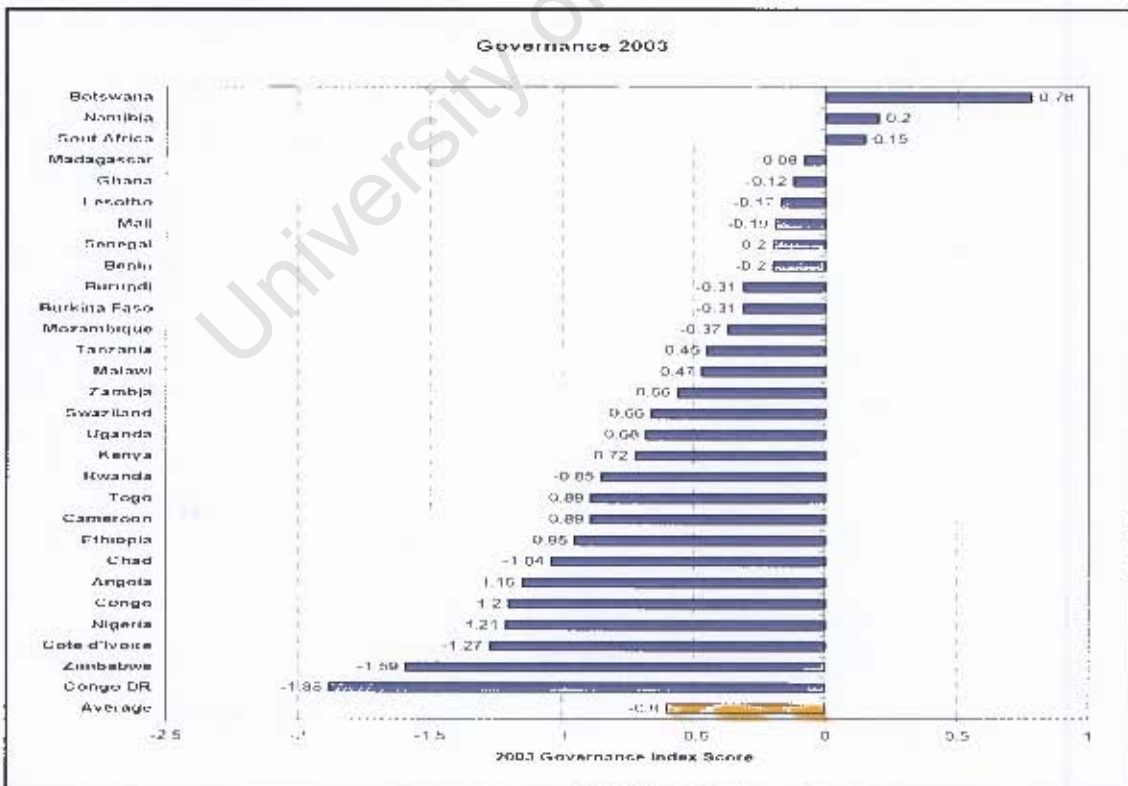


Figure 11: Governance Index 2003



### ***4.3.3 AIDS Governance***

According to Strand (2007), AIDS governance is defined as the type of national response to the HIV/AIDS epidemic (idealistic, authoritative, or authoritarian). UNAIDS and other such institutions promote idealistic, or human-rights based, responses; whereby they argue for protection of people affected by HIV/AIDS through formal policies, laws, and regulations and presume that an expanded human rights environment positively affects service outputs and utilization (USAID et al., 2003). In a joint effort to measure the national AIDS responses, USAID, UNAIDS, WHO, and the POLICY Project developed the AIDS Programme Effort Index (API).<sup>60</sup> The API measures “Program Effort” across ten components: political support; policy and planning; organizational structure; program resources; evaluation, monitoring and research; legal and regulatory environment; human rights; prevention programs; care and treatment services; and mitigation programs.

The “national program,” as understood by the API, involves efforts by the government to respond to the HIV/AIDS epidemic. Lieberman (2005) describes the API as a measurement of the “Geneva Consensus”, or a list of rules and regulations put out by UNAIDS. The application of the API indicates that these donor agencies believe that certain policies, programmes, and government actions are the best course for governments to respond to HIV/AIDS. Since the components of the API seek to measure participation, accountability, service delivery, responsiveness and human rights, it can be argued that the institutions that administered the API encourage a more idealistic form of AIDS governance, as described by Strand (2007).

The level of idealism in national AIDS responses may influence HIV/AIDS progress and the effectiveness of HARFA. Donors administer the API in order to determine how well countries are responding to their epidemics. They assume that countries with more idealistic responses to AIDS will spend foreign aid more effectively because they follow the “rules” i.e. they have laws protecting individuals affected by HIV/AIDS, involvement of civil society, maintain care and treatment programmes,

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<sup>60</sup> Using the key informant method, a national consultant (an expert in the field of HIV/AIDS outside of the national HIV/AIDS program) researched answers to a questionnaire through personal interviews with people working in the field.

etc... To operationalize the concept of AIDS governance, I use the national API scores whereby higher scores will coincide with greater levels of idealism in AIDS governance.

Despite some methodological concerns and limited access to the complete dataset,<sup>61</sup> the API is the best available indicator of AIDS governance. The inclusion of the AIDS governance variable into the analysis will attempt to discern two questions. First, I will want to determine if there is a relationship between the amount of HARFA a country receives and their API score. Second, I will determine if the API variable modifies the impact of HARFA on an effective national AIDS response.

Figure 12: AIDS Programme Effort Index 2003

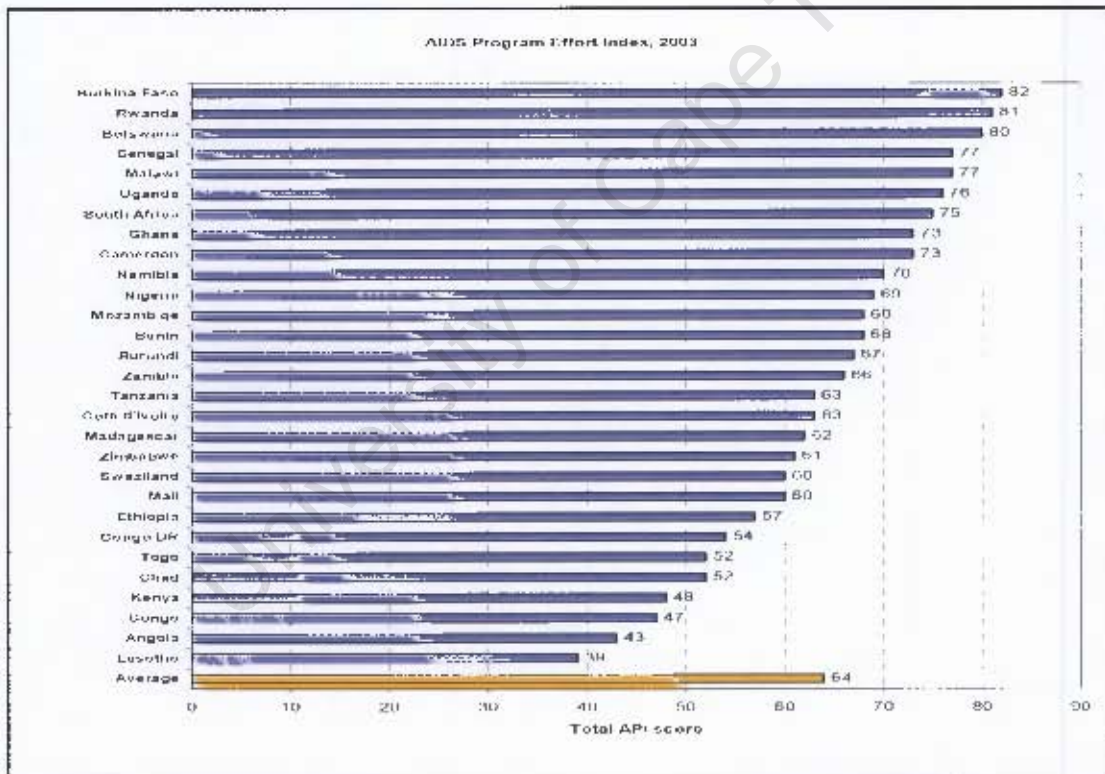


Figure 12 displays the national API scores and demonstrates a small range (42 point difference) of scores across the 29 countries. Region does not seem to influence the scale since the top five and bottom five countries represent different regions. The average API score is 64, which falls between Tanzania and Zambia. Uganda and

<sup>61</sup> The available dataset records the "score" for each component of the API. It does not list the data for each question asked in the survey, which could have been useful in isolating specific measurements of AIDS governance, such as participation of civil society.

Senegal, which are often cited as the “success stories” of AIDS governance, are in the top quarter of the API along with Botswana, Rwanda, Burkina Faso, Malawi, and South Africa. Lesotho has the lowest score. The subjective nature of the API (i.e. personal interview of experts by an in-country consultant) raises some problems with using this data. Therefore it is difficult to distinguish the difference between a score of 66 or 67.

#### ***4.3.4 The severity of the HIV/AIDS epidemic***

As noted in chapter two, the state and extent of the HIV/AIDS epidemic varies across Sub-Saharan Africa. The different levels and trajectories of the epidemic may shape foreign aid allocations and national AIDS responses. For instance, a country with a high and growing level of HIV prevalence will need to provide treatment to a larger percentage of its population, which requires more funding. In contrast, a country with a low and static epidemic may be more likely able to apply HARFA effectively since a smaller number of people are infected. The severity of the epidemic tells us whether HIV/AIDS is manageable or not.

For the purpose of this thesis, I attempt to capture the actual extent of the national HIV/AIDS epidemic and ask a simple question: are countries faced with severe or mild epidemics? While this simplification creates some limitations, it at least provides an empirical way to recognize that countries experience different levels of the disease. To operationalize severity, there are several options. First, I could look at the overall HIV-positive population within each country. However, this would not take into account national population size. To address this, I could use the percentage of adult HIV prevalence; however, these figures change thorough time as countries experience an increase or decrease of HIV infections. For example, Burundi, Cote d’Ivoire, Ethiopia, Kenya, Rwanda and Uganda faced more severe epidemics in the late 1990s yet experienced a decline in HIV rates. Even though these countries currently have lower rates, they had to cope with more severe epidemics in the recent past. Therefore, the use of HIV prevalence at the time of HARFA allocation (especially for the treatment analysis where HARFA is measured in 2003) would not capture the intention of the severity conceptual framework.

To operationalize severity, I divide countries into two groups on the basis of their HIV/AIDS prevalence over an eight year time span. Because UNAIDS documents national HIV prevalence since 1997, I employ their measurements as a source of the data (UNAIDS, 1999, 2004b, 2006) and use the highest ever HIV prevalence rate in the past eight years as an indicator of “mild” or “severe” epidemics. Countries with high HIV prevalence (over 10% of the population at any point from 1997-2005) face “severe” epidemics; whereas, countries with low HIV prevalence (below 10% of the population at any point from 1997-2005) face “mild” epidemics. While recognizing that this admittedly arbitrary cut-off point has no scientific or theoretical backing, two academic papers use this method in their work, which provides precedents for its usage in this study (Hsu, 2005; Strand & Mattes, unpublished). Table 1 assigns countries the category of severe epidemic or mild epidemic and separates countries regionally.

**Table 1: Regional Severity Chart**

	<b>Mild</b>	<b>Severe</b>
<b>Southern Africa</b>	Angola	Botswana Lesotho Malawi Mozambique Namibia South Africa Swaziland Zambia Zimbabwe
<b>East Africa</b>	Madagascar Tanzania Uganda	Burundi Ethiopia Kenya Rwanda
<b>Central/West Africa</b>	Benin Burkina Faso Cameroon Chad Congo DRC Ghana Mali Nigeria Senegal Togo	Cote D'Ivoire

In addition to addressing the severity of the epidemic, this division also reflects regional differences. For example, East African countries mainly face “mild” epidemics while Southern African countries experience “severe” epidemics. This chart confirms global reports that Southern Africa suffers from high levels of HIV infection. Eastern Africa currently has a mild epidemic but previously half of the countries in this sample had severe epidemics. Central and Western Africa has consistently faced a mild and controllable epidemic.

At this point, all concepts have been defined and operationalized for this study. On their own, the descriptive findings provide rich information such as which countries have experienced an increase or decrease in HIV prevalence or how much ART coverage a country provides. It is also interesting to “eyeball” where countries rank on each of the national characteristics indicators. Yet the wealth of this information requires systematic and statistical comparison. The next chapter will empirically examine the relationships among the variables identified and discussed in this chapter.

## **CHAPTER FIVE**

### **RESEARCH FINDINGS**

Based on the research questions and hypotheses developed from the literature review, this chapter will empirically examine the relationship between HIV/AIDS related foreign aid and the two indicators of HIV/AIDS progress: HIV prevention and treatment. First, I will observe the associations of HARFA and HIV prevention and then HARFA and treatment. Second, I will discuss the importance of the four national characteristics, identified by scholars, which may influence HIV/AIDS progress. Some emphasize state capacity and wealth; others identify good governance; a new school of thought separates AIDS governance from governance; and some scholars argue the importance of the level and intensity of an epidemic. Since these national characteristics are important, the third section will consider the individual impact of each factor on HIV/AIDS progress. Following the bivariate analyses of these associations, the fourth section will use multiple regression analyses to determine the most influential determinant of HIV/AIDS progress. The final section explores the effectiveness of HARFA by considering the interaction effect of these national characteristics on the relationship between foreign aid and treatment.

#### **5.1 The impact of HARFA on HIV/AIDS progress –bivariate analyses**

In this section, I examine the main question of the thesis: what is the impact of HIV/AIDS related foreign assistance on HIV/AIDS progress? Since I operationalize progress with two indicators, I will begin by assessing each separately.<sup>62</sup> First, I look at the effect of HARFA measured at 1996 on the average percentage change in HIV prevalence from 1997-2003. To recall the logic of this examination, AIDS funding is, in part, directed at prevention campaigns. I use the indicator, change rate of HIV prevalence, to capture the concept of prevention as an outcome. It would be expected that countries with more HARFA in 1996 had more funding and hence more successful prevention programmes, which resulted in a decline of HIV prevalence. In statistical terms, I expect to find a strong negative association between these variables.

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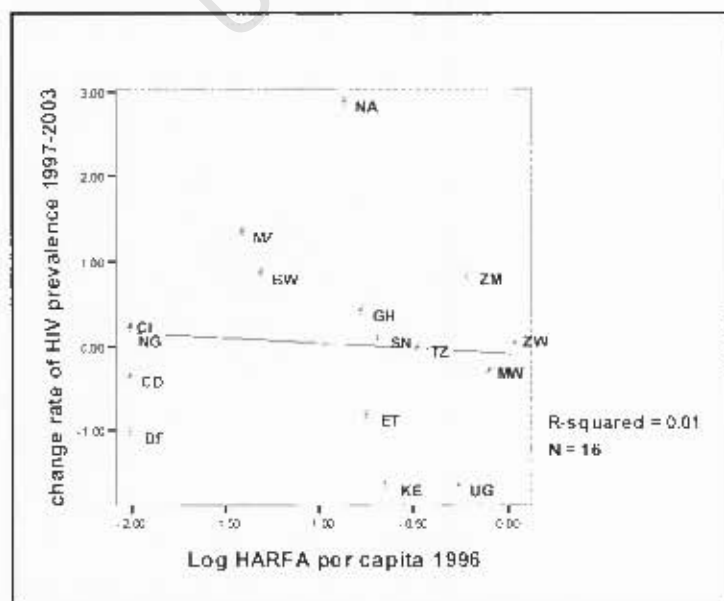
<sup>62</sup> The two indicators of HIV/AIDS are not statistically correlated.

With regards to the second indicator of HIV/AIDS progress, I consider the effect of HARFA measured at 2003 on antiretroviral therapy (ART) access measured at 2005. The reasoning for this assessment presupposes that AIDS funding allocated to treatment programmes puts more people on lifesaving drugs. In statistical terms, I expect to find a strong positive relationship between HARFA and ART access. To test these hypotheses, I use bivariate correlations (Pearson's R) and scatter plots of the variables to empirically test these relationships.

### 5.1.1 HIV/AIDS related foreign assistance and the rate of change in HIV prevalence

For the first indicator of HIV progress, this analysis seeks to assess the impact of AIDS funding on HIV prevention. An examination of the scatter plot of log HARFA and change rate in HIV prevalence (Figure 13) reveals no pattern between HARFA and change rate within the sample. This is confirmed by a very weak bivariate association (Pearson's  $r = -0.079$ ). While this correlation is negative as hypothesized, the probability of this association is very low. The relationship between HARFA measured in 1996 and the change rate in HIV prevalence 1997-2003 is weak and statistically insignificant. These findings suggest no pattern between additional increments of AIDS funding in 1996 and HIV reduction between 1997 and 2003.

Figure 13: Scatter plot of Log HARFA 1996 and change rate of HIV prevalence 1997-2003



We can gain a deeper understanding of the complexities between HARFA and HIV reduction by further summarizing the scatter plot. For instance, Namibia received a modest amount of AIDS funding and had the highest rate change, or increase, in HIV prevalence. Uganda and Kenya had the lowest rate changes (indicating that these countries slowed the progression of the epidemic and reduce HIV prevalence at the surveyed sentinel sites), however Uganda received more funding for AIDS than Kenya. Burkina Faso, Cote d'Ivoire, the DRC and Nigeria obtain very little funding specific to HIV/AIDS, and yet these countries had some of the better percent decreases in HIV prevalence in the sample.

### ***5.1.2 HIV/AIDS related foreign assistance and ART coverage***

On the second indicator of HIV progress, my analysis aims to determine the impact of AIDS funding on access to treatment. An inspection of a scatter plot of log HARFA and log ART access in Figure 14 reveals a diagonal upward trend indicating a positive relationship between the variables. The bivariate analysis confirms this relationship. Pearson's  $r$  is positive and the probability of the association is high ( $r = 0.567$ )<sup>63</sup>. Since both variables are logged, we interpret the estimated slope measurement ( $b = 0.44$ ) to mean that a proportional change in HIV/AIDS related funding results in a proportional change in ART access. In other words, if a country was one percent above the average HARFA in the 29 country sample, it performed about .44 percent above the sample mean with respect to ART access. From this assessment, the empirical relationship between HARFA measured in 2003 and ART access is strong and significant. Across the 29 countries, HARFA statistically explains 30 percent of the variation in ART access.<sup>64</sup>

The scatter plot provides additional contextual information. Botswana and Namibia are in the top right corner signifying high levels of AIDS funding and ART coverage; whereas DRC, Ghana, Madagascar and Nigeria at the bottom right corner, suggesting low funding and low access of treatment. Another observation includes the placement of Chad, which received the least amount of AIDS funding but provided moderate

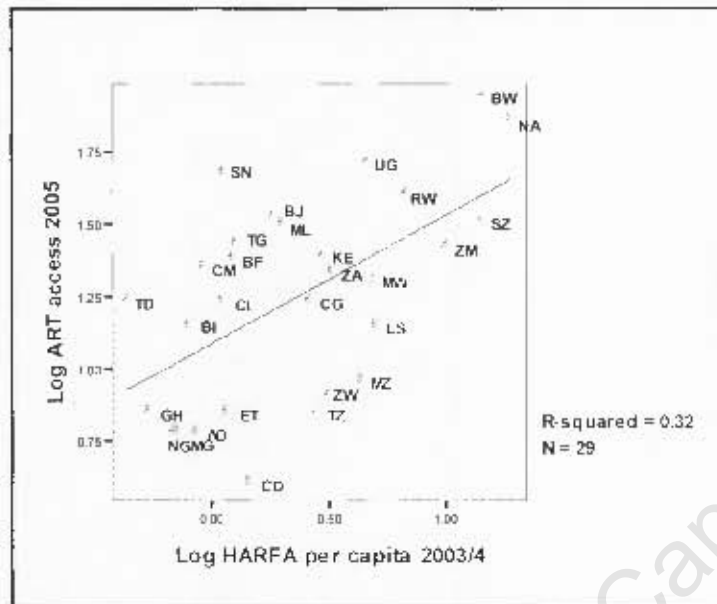
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<sup>63</sup>  $p < .001$

<sup>64</sup> Adjusted  $R^2 = 0.30$

coverage of treatment (17 percent). South Africa is in the middle of the scatter plot representing an average for both foreign aid and treatment.

Figure 14: Scatter plot of Log HARFA 2003 and Log ART Access 2005



The influence of additional funding directed at PEPFAR focus countries does not appear to improve ART coverage. While most of the countries in the top right corner are PEPFAR focus countries, the other focus countries are spread throughout the scatter plot. For example, Tanzania and Mozambique are above the median for HARFA however they rank low on ART access. To confirm that PEPFAR funding is not driving ART coverage, I conduct a bivariate analysis of log HARFA and log ART access with just the non-PEPFAR focus countries and find a positive association ( $r = 0.321$ ).<sup>63</sup> From this, we can conclude that the additional bi-lateral foreign aid provided by the PEPFAR program does not particularly influence access to ART treatment across the 29 countries. Nonetheless, PEPFAR funding is included in my definition of HARFA because it is bi-lateral aid; however it does not need special consideration in the multiple regression analyses.

Since Botswana provided the highest level of treatment (85 percent) in 2005 and received the second highest amount of HARFA in 2003, this case requires further

<sup>63</sup> This correlation is actually statistically insignificant ( $p = 0.225$ ) because sample size is small. 16 countries are non-PEPFAR.

contextualization. A large amount of private funding (which is not included in my measure of HARAFA), approximately US\$ 100 million, was invested in Botswana after 2000 to launch a massive treatment programme in collaboration with the government, the Gates Foundation, the pharmaceutical companies (Merck and Bristol-Myers Squibb), and the Harvard AIDS Initiative (Garrett, 2007). Even though problems of service delivery and staff shortages occurred, the fact remains that Botswana, compared to the other countries, had the first well funded treatment programme, and this fact is reflected in the position of Botswana on the scatter plot.

### *5.1.3 Discussion of the bivariate analyses*

Thus, two important findings are drawn from the bivariate analyses of HIV/AIDS related foreign assistance and HIV/AIDS progress. First, there is no correlation between HARAFA and the rate of change in HIV prevalence. Contrary to expectations, increased levels of AIDS funding do not appear to reduce HIV prevalence (nor does it increase rates).

Yet the outcome of this analysis could be a function of the small sample of cases I was able to use, 16 countries. It could also be that the time span of the Asamoah-Odei et al. study (2004) is not long enough to measure the success of prevention programmes. De Waal notes that it took eight years to show the first signs of success in Uganda, a country that boasts “a success story” (2006, p. 109). A more likely explanation of this finding is that unlike treatment, HIV prevention requires behaviour change of individuals within a population. Since the relationship of HARAFA and HIV prevention validates the null hypothesis, I turn my attention to the second indicator of HIV/AIDS progress, ART access.

The second main finding in this section identifies AIDS funding as an important indicator of treatment. Countries receiving more HARAFA provide better coverage of ART. Yet even though the relationship between foreign aid and treatment appears strong and significant, theories discussed earlier in the thesis suggest that alternative factors may influence HIV/AIDS. If this is true, the robust relationship between HARAFA and ART access may be spurious and disappear or reduce once we consider

other variables. These national characteristics need to be considered as determinants of access to treatment as well as influences of AIDS funding.

## 5.2 The importance of national characteristics

I now move to examine and discuss the importance of national characteristics. Is the apparently strong relationship of IARFA and access to treatment, as identified in the last section, illusive? Or does it reflect the fact that effective and well governed states do a better job at combating HIV and simultaneously tend to attract and receive higher levels of AIDS funding? These are complicated questions that require systematic exploration. In this section, I will look specifically at the relationships among the independent variables. First, I want to determine if there is any pattern to IARFA distribution and discuss which national characteristics seem to attract funding. I will then assess other correlations among the national characteristics. To identify associations, I use a correlation matrix of the five variables (presented in Table 2)<sup>66</sup>; HIV/AIDS related foreign assistance, GDP per capita, governance, AIDS governance and severity.<sup>67</sup>

Table 2: Bivariate Correlation Matrix of Independent Variables

	Log HARFA	Log GDP per capita	Governance	AIDS Governance	Severity
Log HARFA	1				
Log GDP per capita	.427*	1			
Governance	.349 <sup>68</sup>	.424*	1		
AIDS Governance	.184	.164	.437*	1	
Severity	.612**	.289	.190	.076	1

<sup>68</sup> 90% confidence<sup>68</sup>

\* 95% confidence<sup>69</sup>

\*\* 99% confidence<sup>70</sup>

To address the first set of questions regarding funding allocations, IARFA correlates strongly with GDP per capita, governance and severity, which suggests that counties with more wealth, better governance and more severe epidemics receive more AIDS funding. In their study on aid effectiveness, Burnside and Dollar find that aid is

<sup>66</sup> A correlation matrix provides the bivariate correlations coefficients between each variable.

<sup>67</sup> Because severity is a dichotomous measure, I can include it in a correlation matrix. The Eta from an Anova test also shows virtually the same correlation between IARFA and severity (0.612).

<sup>68</sup>  $p < .10$

<sup>69</sup>  $p < .05$

<sup>70</sup>  $p < .001$

allocated to developing countries with better institutional quality (2004). My preliminary findings support this theory because more HARFA corresponds with better governance and state capacity. HARFA also correlates with severity. Better AIDS governance, however, does not associate more foreign aid.

To investigate this further, I conduct a multiple regression whereby HARFA is the dependent variable and the three influential national characteristics are independent variables. The results are shown in Table 3 and identify severity as the strongest and most significant driving factor for HARFA distribution, which contradicts the theory posed by Burnside and Dollar. Nonetheless, taken together, state capacity, governance and severity explain 40 percent of the variance in foreign AIDS funding.

Table 3: Multiple regression for Contextual Variables on HARFA

	HARFA	
	B	Beta
Constant	-.683	
State Capacity	.281	.207
Governance	.127	.163
Severity	<b>.459</b>	<b>.521*</b>
N		29
Adjusted R <sup>2</sup>		.40

\* 95% confidence

\*\* 99% confidence

Now that I have identified what partly drives HARFA allocations, I must also consider the other associations from Table 2. The national characteristics discussed in the literature review appear theoretically separate, however other hypotheses suggest that the contextual variables relate with one another. For example, severe epidemics may reduce state capacity and undercut democracy (Mattes, 2003); democratic governance may promote idealistic AIDS governance by improving human rights and other liberties (Hsu, 2005); and state capacity may improve governance, and vice versa, through government reach and effectiveness.<sup>71</sup> In fact, the bivariate correlations in Table 2 show that governance correlates strongly with state capacity and AIDS governance. This indicates that countries with better governance generally have

<sup>71</sup> However, research has shown that in Africa, the relationship between state capacity and governance has never been strong due to colonial history, economic crises, and political instability (Brütigam & Knack, 2004).

greater wealth and higher levels of idealism in AIDS governance. The severity of the epidemic, however, does not appear to adversely affect state capacity or democracy.

These are interesting findings that require further exploration; however for the purposes of this section, I only recognize the empirical relationships, or endogeneity, among the five independent variables. Through this analysis, it appears that the relationship between HARFA and treatment is not spurious. The severity of the epidemic appears to drive donor funding, and it is unlikely that countries with higher levels of HIV prevalence can provide increased treatment independently of foreign aid because these states have a greater demand for treatment.

Yet the theories discussed earlier propose that national characteristics may influence HIV/AIDS progress. Even though more wealthy and better governed (both generally and specific to the epidemic) states do not appear to attract more AIDS funding, these same states may do a better job at combating the epidemic. Therefore, I must first look at the relationships between the national characteristics and ART access before suggesting that foreign aid for HIV/AIDS is the most important determinant of treatment.

### **5.3 The impact of national characteristics on treatment**

The four factors identified in the literature review (state capacity, governance, AIDS governance and severity) posit that different national characteristics may be linked with HIV/AIDS progress. The theory behind this hypothesis suggests that the effectiveness of institution and bureaucratic processes as well as idealistic AIDS responses determine the rollout of treatment. This model considers these contextual variables as the independent variable and ART access as the dependent variable. I use scatter plots and bivariate correlations to assess the relationships.

#### ***5.3.1 State Capacity***

To recall the argument about the impact of state capacity on HIV/AIDS in Africa, de Waal (2003) and Poku (2006) argue that African states generally lack the resource capabilities (i.e. weak infrastructure and health service delivery) to combat effectively

the epidemic. Price-Smith et al. (2004) find that countries with more general wealth, as well as better access to doctors, education, telephones and infrastructure, experience greater progress in the fight against the disease. If the logic and evidence underlying Price-Smith's study of state capacity is correct, I would expect to find a positive relationship between state capacity and ART access signifying that countries with better state capacity (i.e. more wealth) provide more ART access.<sup>72</sup>

The scatter plot of log ART access and log GDP per capita in Figure 15 supports this hypothesis with a positive slope. It appears that wealthier countries do indeed tend to provide greater ART coverage to people who need it. This is confirmed by a strong and significant bivariate correlation ( $r = 0.442$ ).<sup>73</sup> Since both variables are logged, we interpret proportional changes. The estimated slope measurement ( $b = 0.47$ ) indicates that a country with one percent above the average GDP per capita of all countries was also 0.47 percent above the average with respect to ART access. The relationship also appears partially linear and explains 20 percent of the variation in the dependent variable.

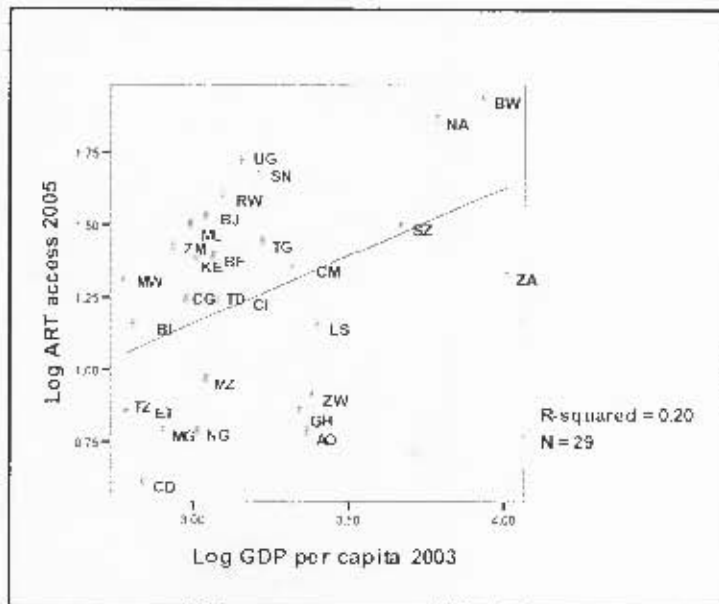
As the hypothesis predicts, it appears that greater state capacity improves the effectiveness of the response to HIV/AIDS, in terms of treatment. It is therefore expected that countries with higher levels of state capacity will provide the uppermost levels of ART access. Botswana and Namibia illustrate this relationship perfectly as representing the second and third wealthiest countries and doing the best in ART provision. Likewise, the DRC and Madagascar have some of the fewest resources and hence provide the lowest coverage of treatment.

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<sup>72</sup> The measurements for the included variables take into account population size. ART access is measured as a percentage of HIV-positive people receiving treatment who need it and the state capacity is measured by per capita.

<sup>73</sup>  $p < .05$

Figure 15: Scatter plot of log GDP per capita and log ART access



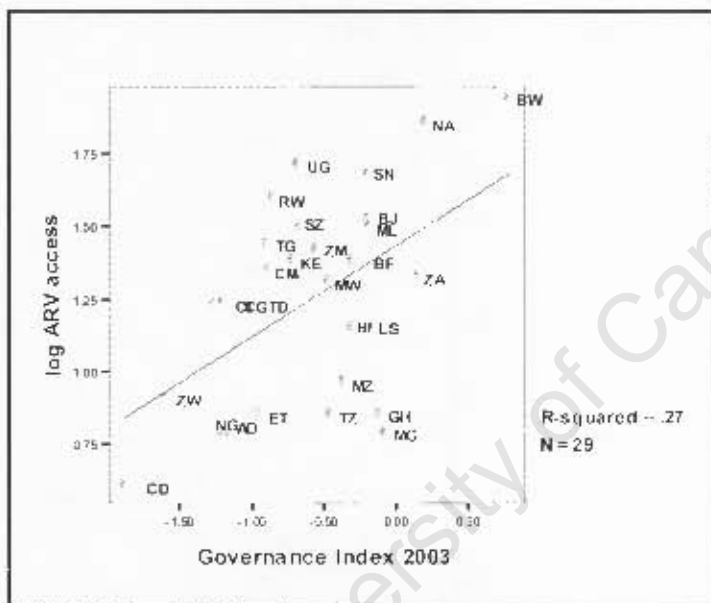
The case of South Africa requires some attention as it is an outlier and should be doing a much better job at providing treatment. It has the highest level of state capacity in this sample but ranks near the middle of the sample for providing treatment with only 21 percent of ART access for people who need it. South Africa is a unique case because it lacks unity in the fight against HIV/AIDS. The discourse of AIDS denialism is at the forefront of this problem whereby the government, civil society, scientists and academics disagree on the best methods to combat HIV/AIDS (Nattrass, 2007).

### 5.3.2 Governance

To recall the literature about governance and HIV/AIDS progress, Hsu (2005), D. Patterson (2001) and others argue that “good governance” is an effective way to control HIV/AIDS. This assumption is based upon the theory that national stability, effective national policies and improved political, civil and human rights provide a secure environment conducive to combating the epidemic. Case studies have shown that accountability, transparency, participation and access to information reduce HIV incidence and increase treatment (two examples are Thailand and Brazil) (Hsu, 2005). Due to the theory and case studies, I expect that better governed African countries have greater levels of treatment.

The scatter plot in Figure 16 supports the hypothesis of good governance relating to HIV/AIDS with a positive slope. This is confirmed by a strong and significant bivariate correlation ( $r = 0.581$ ).<sup>74</sup> To understand the slope measurement ( $b=0.316$ ) consider that for every standard deviation increase (or decrease) on the World Bank governance scale, a country experiences a 0.32 increase (or decrease) in the proportional percentage change in ART access. General governance is an influential factor because it explains 27 percent of the variation in ART access.

Figure 16: Scatter plot of Governance and log ART access



The empirical findings seem to support the hypothesis that better governed countries provide greater ART coverage. Botswana and Namibia again demonstrate this relationship because they represent the countries with the highest levels of governance and provide the most treatment; in contrast, the DRC represents the country with the lowest levels of governance and ART access. The rest of the sample falls between these two extremes on a relatively inclining and partially linear pattern. However, despite the statistical evidence presented above, the three countries after Namibia on the governance scale deviate drastically from the pattern. South Africa provides 21 percent access to ART, and Madagascar and Ghana only supply 6-7 percent treatment coverage. This is far less than expected when considering the theories presented by Hsu (2005) and D. Patterson (2001).

<sup>74</sup>  $p < .01$

### 5.3.3 AIDS Governance

The AIDS Program Effort Index (API), which measures AIDS governance for this study, was designed by international AIDS institutions and donor agencies to assess national efforts in the fight against the disease. There is an assumption that more political support and certain policy developments lead to more effective responses. These organizations encourage a human-rights based approach, or more idealistic AIDS governance, because they assume it will positively affect HIV/AIDS progress. Based on their criteria, I expect that countries with higher levels of idealism in AIDS governance, or higher API scores, provide greater ART coverage.

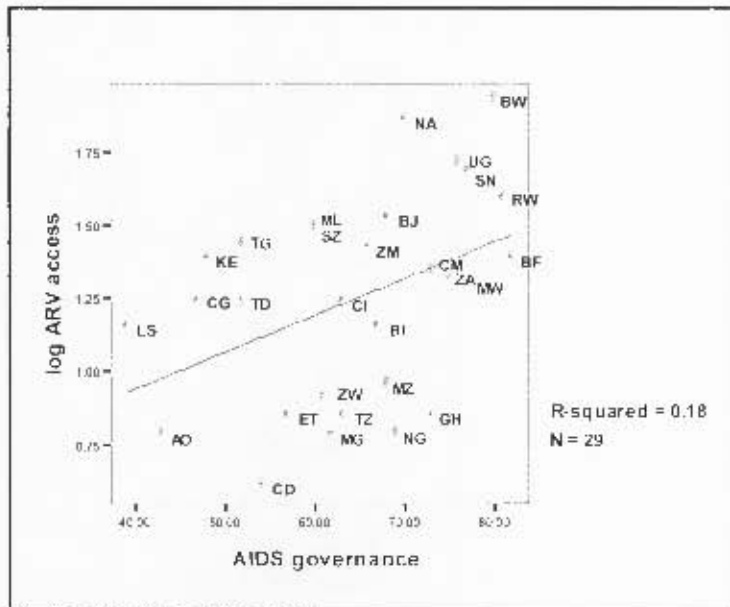
In Figure 17, the scatter plot of AIDS governance and ART access indicates a positive slope and therefore supports this hypothesis. This relationship is validated with a strong bivariate correlation ( $r = 0.422$ ).<sup>75</sup> The estimated slope ( $b = 0.013$ ) means that for every point increase on the API scale, countries experience about 0.01 percent increase on the logarithm scale of ARV access. AIDS governance explains 18 percent of the variance in treatment.

The empirical results support the logic that countries with higher levels of idealism in AIDS governance have greater ART coverage. The relationship does not appear as strong as the previous national characteristics and this is confirmed by observing the location of countries on the scatter plot. For example, Botswana and Namibia no longer perfectly represent the relationship as they did with state capacity and governance. Botswana remains high on the API scale and high on treatment access; however, Namibia only ranks tenth highest in the sample of API scores. Senegal, Rwanda and Uganda provide relatively high levels of treatment and also have higher levels of idealism in their AIDS response. Lesotho has the lowest API score in this sample (39) suggesting that it has low levels of idealism, yet it does not provide the least amount of treatment. Likewise Burkina Faso has the highest AIP score (82) but does not provide the most coverage of ART. These two examples demonstrate the ambiguity of the relationship between AIDS governance and treatment.

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<sup>75</sup>  $p < 0.05$

Figure 17: Scatter plot of AIDS governance and log ARV access



It is important to note however that the API includes two questions about treatment. Respondents were asked to rank resources available for treatment as well as to identify if it was part of the national programme for HIV/AIDS (USAID et al., 2003, p. 33&44). However, ART provision was one option amongst 17 other health provisions (such as orphan care and mother to child programmes) within each question. The report recognizes that "the index is intended to measure program effort independent of program outputs" whereby policy and political prioritization are indicators opposed to HIV progress in actual terms, such as the ART coverage (USAID et al., 2003, p. 1). Therefore, we can use the API when assessing the impact of AIDS governance on ART coverage.

### 5.3.4 Severity

Barnett and Whiteside (2005) recognize that different societies experience different types and flows of the epidemic. The severity variable attempts to measure the extent of the epidemic by indicating whether a country has experienced high (over 10 percent) or low (below 10 percent) HIV prevalence levels since 1997. It is unclear whether ART access is simply a function of the actual need for treatment rather than the context of the country. Perhaps countries with severe epidemics provide greater access to treatment because the extent of HIV/AIDS is recognized and prioritize by

national leaders and donors as a major problem. Alternatively, these countries have a greater demand for treatment, which may limit ART coverage. I therefore want to determine if the severity of the HIV/AIDS epidemic affects access to treatment. To do this, I run a difference of means test, which allows me to compare the means of treatment access for countries classified as severe and mild. For interpretational purposes, I use raw ART access data and not the logged data.

**Table 4: Difference of means for ART access and severity**

	<i>Severe</i>	<i>Mild</i>
Mean percentage of ART access	27.57	20.33

Table 4 shows the results of the mean comparison between countries with severe or mild epidemics. Countries classified as experiencing severe epidemics actually provide greater treatment coverage with 27.57 percent ART access opposed to countries with mild epidemics that only provide 20.33 percent coverage.<sup>76</sup> These results support the first hypothesis that there is greater access to treatment in countries with severe epidemics.

In this section, I have empirically demonstrated that national characteristics do appear to influence treatment moderately. Specifically, GDP per capita, governance and AIDS governance stand out as having statistically significant associations to ART access, which supports the theoretical arguments made in the literature review. However, these findings require further exploration, especially considering the previous results on the link of state characteristics and AIDS funding. The next section will continue to investigate these relationships whilst controlling for HARFA.

#### **5.4 HARFA and national characteristics in a multiple regression**

Before we proceed any further, it is useful to pause and review the findings thus far. First, there is a strong association between AIDS funding and access to treatment. Second, foreign aid for HIV/AIDS control appears to be disbursed primarily to countries based on the severity of the epidemic; however foreign aid is also linked with GDP per capita and governance. In addition, there are observable statistical

<sup>76</sup> For the difference of means test, the eta is moderate but not significant ( $\eta^2 = .188$ ; F-statistic = .993). The insignificance of this result is most likely due to the small sample size and the extreme cases within the sample such as Botswana.

associations between some of the other national characteristics (GDP per capita, governance and AIDS governance) and HARFA. Finally, national characteristics partly influence access to treatment, which may affect the original relationship between donor assistance and treatment.

I must therefore determine if HARFA is still linked to ART access even after controlling for these other influential variables. If HARFA retains a strong and significant effect, then donor assistance matters for treatment; however if the relationship disappears or declines, then access to treatment may not depend on foreign aid, which would have important policy implications for donors, national leaders and other actors. I use a multiple regression analysis to empirically assess the influence of HARFA on treatment.

The results from a multiple regression indicate that HARFA is the most influential factor explaining ART access. To determine this, I consider the findings from four models shown in Table 5. The first model reports the results from a linear regression of HARFA on ART access. Even though these figures were recorded in section 5.1.2, they provide a basis from which to compare the effects of the other variables on HARFA's relationship with ART coverage. In addition to having a strong and significant correlation coefficient, the regression analysis shows that AIDS funding explains 30 percent of the variance in treatment. This is more variance explained than any of the national characteristic.

In the previous section, I individually tested the influence of the national characteristics on ART access and found that there is a modest and statistically significant impact of state capacity, governance and AIDS governance on treatment. I now want to include the four variables in a multiple regression to determine if these associations remain strong even when controlling for the other national characteristics. Model 2 shows the results from this regression analysis and indicates that the individually robust relationships, reported in section 5.3, are muted when taking into account other national characteristics. All four associations reduce in strength and significance. This is most likely due to the endogeneity among these variables because governance, GDP per capita and AIDS governance conceptually and empirically overlap.

**Table 5: Multiple regression for HARFA and Contextual Variables on ARV access**

	Model 1		Model 2		Model 3		Model 4	
	b	Beta	b	Beta	b	Beta	b	Beta
Constant	1.087		-.034		.290		1.256	
HARFA 2003	<b>.443</b>	<b>.567**</b>			<b>.396</b>	<b>.506*</b>	<b>.343</b>	<b>.440*</b>
State Capacity			.277	.262	.165	.156		
Governance			.174	.286	.131	.214	<b>.222</b>	<b>.364*</b>
AIDS Governance			.007	.249	.007	.225		
Severity			.044	.064	-.138	-.200		
N		29		29		29		29
Adjusted R <sup>2</sup>		.296		.382		.415		.394

<sup>o</sup> 90% confidence

\* 95% confidence

\*\* 99% confidence

I add HARFA to this multiple regression analysis to assess its effect on the model because HARFA also correlates with some of the national characteristics (as discussed in section 5.2). Model 3 records the results of this analysis, which includes HARFA and the four national characteristics as the independent variables. While the impact of the national characteristics on treatment reduces even further, the correlation coefficient for HARFA remains strong and significant even after taking into account the levels of wealth, governance and epidemic (although the standardized coefficient does decrease to 0.506). From this model, it appears that donor assistance directly influences treatment.

Nevertheless, the theory behind the four national characteristics influencing HIV/AIDS progress is too convincing to discard. To prevent the endogeneity problem among the independent variables from leading us to prematurely throw out this explanation, I include the most influential national characteristic in a multiple regression with HARFA. To determine which variable has the most influence, I drop factors out of the multiple regression one by one based on which factor has the lowest probably (or highest “p”). State capacity is the first variable removed, then severity and finally AIDS governance. Therefore of the four national characteristics selected for this study, governance is empirically the most influential factor for ART coverage. Statistically, this is supported because governance has the highest and most significant bivariate association with treatment ( $r = 0.581$ ). In addition, the theoretically argument behind its impact on HIV/AIDS progress has been developed extensively by international institutions as well as independent academics.

Model 4 reports the results from a multiple regression analysis of HARFA and governance on treatment.<sup>77</sup> Both variables remain statically significant however the standardized correlation coefficient for governance reduces more than the coefficient for AIDS funding. By adding the governance variable to the first model, the variance explained increased nearly 10 percent from the first model. Therefore, HARFA and governance together explain 39 percent of the variance in ART coverage. This empirically demonstrates that treatment for AIDS is determined in part by HARFA and by high levels of governance.

The empirical evidence suggests that there is a strong, positive and direct impact of HARFA on HIV/AIDS progress as measured by ART access. This outcome implies that AIDS funding appears to help Sub-Saharan African countries dispense ART regardless of state wealth or the severity of the epidemic. Governance also directly influences treatment signifying that better governed states are providing more coverage of treatment regardless of their situations; nevertheless, in empirical terms, HARFA has greater influence on treatment than governance.

These findings in part support the theoretical assumptions discussed in the aid effectiveness literature review. The fact that HARFA goes to countries with higher levels of HIV prevalence partly confirms that foreign aid is most likely to go to states that need it (Burnside and Dollar, 2004; Sachs, 2005b). Yet better governed countries are doing a better job at combating the epidemic, which indicates that good governance also matters for HIV/AIDS progress.

Thus far the results indicate that HARFA is an important component of treatment, and that it is effective regardless of the recipient state's characteristics. Before we can finally confirm this statement, we need to check whether AIDS funding has different levels of impact depending on the national characteristics of these African countries. The question now becomes, do national characteristics moderate the linkage of HARFA and ART access?

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<sup>77</sup> I also conducted a multiple regression of HARFA and the other individual state factors on ART access. Governance has greater significant and associations than the other variables. AIDS governance remains significant but does not affect the impact of HARFA on treatment; state capacity and severity lack statistical significance.

## 5.5 National characteristics and HARFA on ART access: an interaction analysis

The previous section provides empirical results that foreign aid for HIV/AIDS directly effects ART access. In this section, I want to determine if national characteristics modify the impact of AIDS funding. In other words, is there a greater “return to HARFA” in better governed states or in states with greater wealth? Or is the impact of HARFA constant across states? Evidence from the Burnside and Dollar study on foreign aid accelerating economic growth indicates that the impact of aid depends on the quality of state institutions and policies (2004).<sup>78</sup> Based on their work, I have theoretical grounds to look at the impact of national characteristics on the relationship between HARFA and ART coverage. Does the quality of state institutions, the capacity to absorb funds, AIDS policy and severity of the epidemic modify the effectiveness of HARFA?

In order to examine this question I analyze the interaction effect of HARFA and national characteristics on ART access. Basically, the interaction effect measures how much one factor ( $z$ ) influences the relationship between two other factors ( $x$  and  $y$ ). If factor  $z$  has great influence on the linkage of  $x$  and  $y$ , the relationship is dependent on factor  $z$ . If there is no influence, factor  $z$  does not matter. In statistical terms, the most commonly practiced method of determining the interaction effect assesses a multiple regression with the independent variable, the moderator variable and the interaction variable (measured by multiplying the independent and moderator variables) on the dependent variable.<sup>79</sup> The equation is:

$$y = a + b_1(x_1) + b_2(x_2) + b_3(x_1 x_2)$$

The results from this analysis consider the value of the interaction variable in a multiple regression. If  $b_3$  differs significantly from zero, the interaction is significant, and we can say that the moderator variable affects the relationship between the other variables. However, if the interaction variable is weak or close to zero, it suggests that it does not influence the relationship.

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<sup>78</sup> Burnside and Dollar recognize that there is no support for the competing hypothesis that aid has the same positive effects everywhere (2004).

<sup>79</sup> This model is described fully in Allison (1977) as well as Jaccard and Turrisi (2003).

I calculated the interaction effect of all four national characteristics on the impact of HARFA on ART access and found that none of the interaction terms are statistically significant. However, the transformation of the variables to logarithms and the small sample size may limit my capacity to empirically determine the interaction effect.<sup>80</sup> Thus, I assess the possible impact of the national characteristics on the link between HARFA and ART access by using dummy variables to test for variation in the national characteristics. To do this I use the mean of the variable measurements to dichotomize the national characteristics variables (please see Appendix F) and assign countries as high state capacity or low state capacity; good governance or poor governance; higher levels of idealism in AIDS governance or lower levels of idealism in AIDS governance; severe or mild epidemics. Once I separate the variables, I run a linear regression between HARFA and ART access with both sets of categories and compare results. If the intercept and slope coefficients differ (taking into account their confidence intervals), then the national characteristic influences the effectiveness of HARFA.

Based on the hypotheses of this study, I expect that the effectiveness of HARFA on ART access will be greater in countries with high levels of state capacity, better governance, more idealism in AIDS governance and mild epidemics. The results from the comparison regressions are provided in Table 6. For state capacity, the intercept and slope coefficients differ very slightly suggesting that countries with high state capacity experience greater effectiveness of HARFA. The level of governance does not seem to moderate the relationship between HARFA and ART access because the regressions are similar. For AIDS governance, the intercept and slope coefficients of the two regressions also differ slightly. Countries with less idealism in AIDS governance have a lower intercept point and slope than countries with more idealism in AIDS governance, which seems to indicate that HARFA is more effective in countries with more idealism in AIDS governance. For severity, the intercept and slope coefficients reflect that the severity of the epidemic does not drastically change the impact of HARFA on ART access.

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<sup>80</sup> Allison argues that interaction cannot be estimated with logarithmic measures (1977, p. 151).

Table 6: Comparing the affect of national characteristics on the impact of HARFA on ART Access

	<i>Intercept</i>	<i>b (slope)</i>	<i>Confidence Interval (95%)</i>	
			<i>Lower Bound</i>	<i>Upper Bound</i>
<b><i>State Capacity</i></b>				
Low State Capacity (N=18)	1.071	.403*	.005	.801
High State Capacity (N=11)	1.131	.477*	.028	.865
<b><i>Governance</i></b>				
Poor governance (N=14)	1.071	.403*	.006	.877
Good governance (N=15)	1.131	.477*	.050	.799
<b><i>AIDS governance</i></b>				
Less idealism in AIDS governance (N=15)	1.019	.316 <sup>o</sup>	-.075	.707
More idealism in AIDS governance (N=14)	1.183	.497*	.164	.830
<b><i>Severity</i></b>				
Mild Epidemic (N=15)	1.123	.534	-.178	1.245
Severe Epidemic (N=14)	0.971	.551*	.224	.877

<sup>o</sup> 90% confidence

\* 95% confidence

\*\* 99% confidence

However, while these findings appear revealing and significant, they are in fact not. The inclusion of the 95 percent confidence interval demonstrates that there is considerable overlap across all four national characteristic comparisons. If governance or wealth determined the effectiveness of HARFA, then the interval between the lower and upper confidence points would not overlap as they do. Therefore, the large confidence interval of our regression coefficients illustrates that the “return to HARFA” does not differ significantly between low and high categories of each national characteristic. This rejects the hypothesis that the impact of foreign aid on treatment is moderated by the characteristics of the recipient country.

# CHAPTER SIX

## CONCLUSION

Does HIV/AIDS related foreign aid really work for HIV prevention and treatment? This is a complex question and cannot be answered with a simple yes or no. The academic journal *Foreign Affairs* published a special edition on global health in January 2007 providing space for academics to debate the current challenges of global health (“How to promote,” 2007). At the forefront of this debate was HIV/AIDS; at the core was foreign aid effectiveness. While no one denies that more aid is needed to combat HIV/AIDS and other diseases in developing countries, scholars disagree over how AIDS funding should be dispersed and how to assist weak health systems. However, if we want to convince donor and recipient countries “to maintain the AIDS response as a priority” (Piot, 2006: 527), we need to provide evidence that AIDS funding does indeed “work” (de Waal, 2007). This thesis is an attempt to do that.

### 6.1 Summary of Findings

The quantitative method chosen for this study provides empirical evidence that HARFA does work for AIDS treatment but fails to locate similar evidence for HIV prevention. How seriously can we take these results? Using the best available data, I determined the associations by employing three statistical analyses and taking into account statistical significance and standard error. In addition, I considered time order and controlled for third variables to cancel out potential spurious relationships. Finally, and most importantly, I used theory to drive this research. While this thesis does not go into all of the intricacies of HARFA effectiveness, I have established the general causal claim that more HARFA yields greater ART access. Even though this seems to be an obvious conclusion, it is one that until now has not been empirically proven. This study provides evidence that there is a direct association between AIDS funding and treatment whereby countries receiving more HARFA have better ART coverage and that it is not simply due to better ability to absorb or spend foreign aid.

A second major finding is that the “return to HARFA” is constant across countries regardless of the levels of state capacity, governance, idealism in AIDS governance

and the severity of the epidemic. In other words, HARFA is similarly effective in countries with high or low state capacity, good or poor governance, high or low levels of idealism in AIDS governance, and mild or severe epidemics. Does this study therefore argue that donors can confidently give AIDS funding to countries regardless of their institutions, policies, epidemics, and capacity? It would be irresponsible to make this claim without further research. My measurement of HARFA is broad and does capture the complexities of the donor agencies and recipient organizations nor does it distinguish between the type of aid and the potential conditionality of aid. It also does not consider how aid is dispersed i.e. salaries, medicine, infrastructure, etc.... More research and investigation is needed before these results can become conclusive.

The final finding of this thesis reveals that HARFA does not influence the change rate in HIV prevalence. I have already discussed the limitations and challenges of using HIV prevalence data to monitor HIV/AIDS progress (chapter 3.6) and attempted to control for these limitations by using a trend series study of the same antenatal clinics over a period of six years. Yet, this drastically reduced the sample size to 16 countries and created further limitations.<sup>81</sup> To my knowledge, I used the best data available to measure HIV prevention and it still did not show results. There are many factors that can influence HIV reduction, therefore more investigation and data collection is needed before we can claim that HARFA does not impact HIV prevention.

## **6.2 Implications and Future Research**

This analysis provides empirical evidence “that the major investments made in fighting AIDS are having a commensurate effect in terms of averted infections, illness, and deaths” (Piot, 2006: 527). From this study, we know that HARFA works for ART coverage. Therefore, donors should be encouraged to continue financing AIDS treatment programmes. The failure of the WHO’s “3 by 5” campaign,<sup>82</sup> designed to bring ART to three million people by 2005, may have caused

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<sup>81</sup> The figures for each country are not representative of all antenatal clinics within that country. They are only taken from participating clinics which varied among countries (some countries had 5 clinics whereas other countries had 66 clinics) (Asamoah-Odei, 2004).

<sup>82</sup> WHO and UNAIDS (2006) estimates that more than 1.3 million people were receiving treatment by December 2005.

disappointment and doubt in the international community, aid agencies and recipient countries. Yet, just because the target goals were not met does not mean that the aid did not work. The failure overshadows the fact that more HIV-positive people are on treatment because of an increase in HARFA. As Farmer remarks:

In 2002, there were almost no antiretroviral (ARV) medications in rural Africa, nor were there personnel to deliver them. In 2007, most African nations are working to make AIDS diagnosis and care "a public good for public health" — that is, a service paid for by the commonwealth or rich donors, rather than by individual AIDS sufferers and their families. Although these drugs are as yet reaching very few rural Africans, the past five years have seen significant investments, at the district if not the village level, to make AIDS therapy available for those who are able to walk or find other transportation to district hospitals. (2007)

In regards to the effectiveness of aid on treatment, the four national characteristics included in this study as moderator variables did not have an impact on the link between HARFA and ART access. Additional research is required before policy implications can be established. The results from this thesis provide grounds for further investigation because it determines that donors disburse more funding to countries with severe epidemics, and yet severity does not mitigate the effectiveness of HARFA. There are other possible factors to consider and control for in future research such as colonial history, current trade and economic policies. In addition, the expansion of this study to include other regions of the world would allow for interesting comparative research. A larger sample size of more diverse countries may also produce different results and find that the moderator variables do in fact impact HARFA effectiveness.

The last point I will address concerns data limitations. In order to monitor and evaluate the progress of the HIV/AIDS epidemic, better indicators must be established. UNGASS reports country level bi-annual progress of the disease and indicators (i.e. the number of people educated in HIV/AIDS, condom use and HIV prevalence). However, their reporting system is flawed; data is often missing; and reports are non-comparable because of methodological differences. This study demonstrates the limitation of using currently available data. For their next bi-annual report, UNAIDS has developed better output indicators as well as indicators

measuring HIV/AIDS resource activities.<sup>83</sup> Let us hope that future research will be enriched by this new data and will be used to further investigate HARFA effectiveness.

This thesis looks at the overall impact of AIDS funding in Africa. In part, it considers the big picture because it explores macro-level data. The broad approach prevented this study from dissecting where aid goes, who receives it and how it is spent. Now that there is evidence to suggest that HARFA works for treatment, and more detailed information on HIV/AIDS spending will be available in the near future, further research is necessary to determine if AIDS funding is as effective as it could be. It is hoped that the evidence presented in this research will encourage increased discussion and debate and enlighten future research.

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<sup>83</sup> The National AIDS Spending Assessment (NASA) measures the actual expenditures for HIV/AIDS in terms of domestic, international and private resources (T. Guthrie, personal communication, March 23, 2007).

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# APPENDICES

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## Appendix A: HIV Prevalence Trend

Table 7: HIV Prevalence Data

Countries	# clinics	Percentage of HIV prevalence			
		1997-1998	1999-2000	2001-2003	Rate of Change
Botswana	11	36.6	37.6	38.27	0.835
Burkina Faso	5	6.8	6	4.7	-1.05
Congo DR	7	4.7	N/A	3.9	-0.4*
Cote d'Ivoire	8	9.8	8.7	10.2	0.2
Ethiopia	10	13.7	11.8	11.97	-0.865
Ghana	20	2.7	2.3	3.47	0.385
Kenya	20	13.6	15.4	10.23	-1.685
Malawi	14	19.7	24.3	19.05	-0.325
Mozambique	19	N/A	11.9	14.5	1.3*
Namibia	15	16.3	18.3	22	2.85
Nigeria	66	N/A	4.3	4.65	0.175*
Senegal	7	0.9	0.7	1	0.05
Tanzania	7	13.7	15.3	13.6	-0.05
Uganda	14	9.3	5.6	5.9	-1.7
Zambia	22	20.3	N/A	21.9	0.8*
Zimbabwe	12	29.3	33.5	29.3	0

\*indicates rate of change between two time points and not three.

Source: Asamoah-Odei et al. 2004

## Appendix B: HIV/AIDS related foreign aid data

Table 8: All aid flows for all sectors for HIV/AIDS Control in sub-Saharan Africa, 1996 and 2003

Country	<i>IARFA 1996</i> US\$	<i>IARFA 1996</i> SUS per capita	<i>HARFA 2003</i> US\$	<i>IARFA 2003</i> SUS per capita
Angola	--	--	13,120,000	.86
Benin	--	--	14,700,000	1.83
Botswana	80,000	.05	25,580,000	14.45
Burkina Faso	110,000	.01	15,690,000	1.24
Burundi	--	--	5,760,000	.80
Cameroon	--	--	14,580,000	.92
Chad	--	--	4,070,000	.44
Congo	--	--	9,930,000	2.60
Congo, DR	410,000	.01	79,860,000	1.45
Cote d'Ivoire	140,000	.01	19,660,000	1.11
Ethiopia	10,350,000	.18	80,300,000	1.16
Ghana	3,100,000	.17	11,560,000	.54
Kenya	6,560,000	.23	98,700,000	2.98
Lesotho	--	--	8,970,000	4.99
Madagascar	--	--	12,870,000	.72
Malawi	8,440,000	.82	61,020,000	4.89
Mali	--	--	25,970,000	2.01
Mozambique	670,000	.04	83,820,000	4.36
Namibia	230,000	.14	37,570,000	18.81
Nigeria	1,430,000	.01	88,120,000	.69
Rwanda	--	--	58,940,000	6.68
Senegal	1,930,000	.21	12,650,000	1.12
South Africa	--	--	147,830,000	3.21
Swaziland	--	--	15,750,000	14.15
Tanzania	10,660,000	.34	104,475,000	3.21
Togo	--	--	7,590,000	1.28
Uganda	12,150,000	.56	125,400,000	4.59
Zambia	6,200,000	.63	113,090,000	9.93
Zimbabwe	13,370,000	1.11	40,500,000	3.14
<b>Average</b>	<b>4,739,375</b>	<b>.28</b>	<b>46,140,517</b>	<b>3.92</b>

Source: UNAIDS and Harvard School of Public Health, 1999 and OECD/DAC  
[www.oecd.org/dac/stats/crs/hivaids](http://www.oecd.org/dac/stats/crs/hivaids)

Figure 18: Trend of HIV/AIDS related foreign aid 2000-2005 in Southern Africa

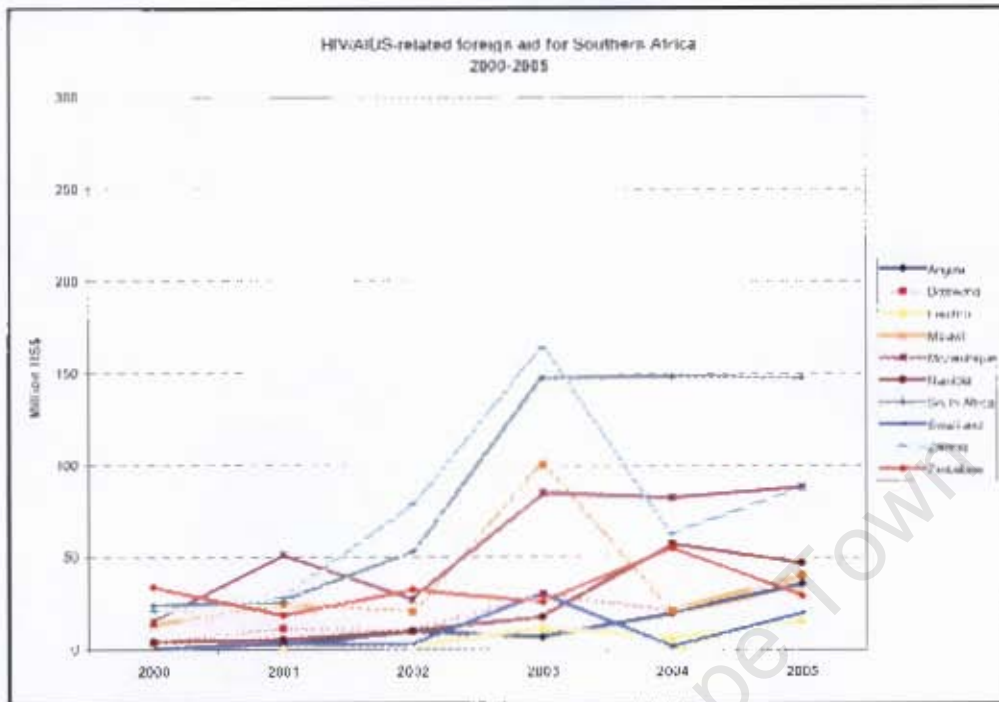


Figure 19: Trend of HIV/AIDS related foreign aid 2000-2005 in Central and Western Africa

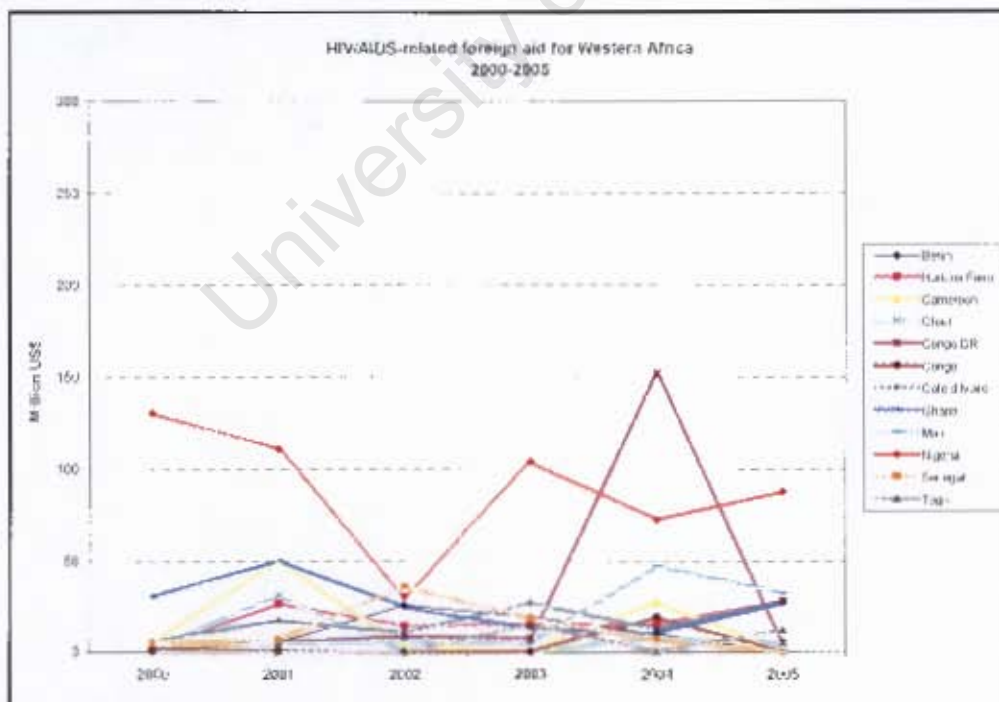
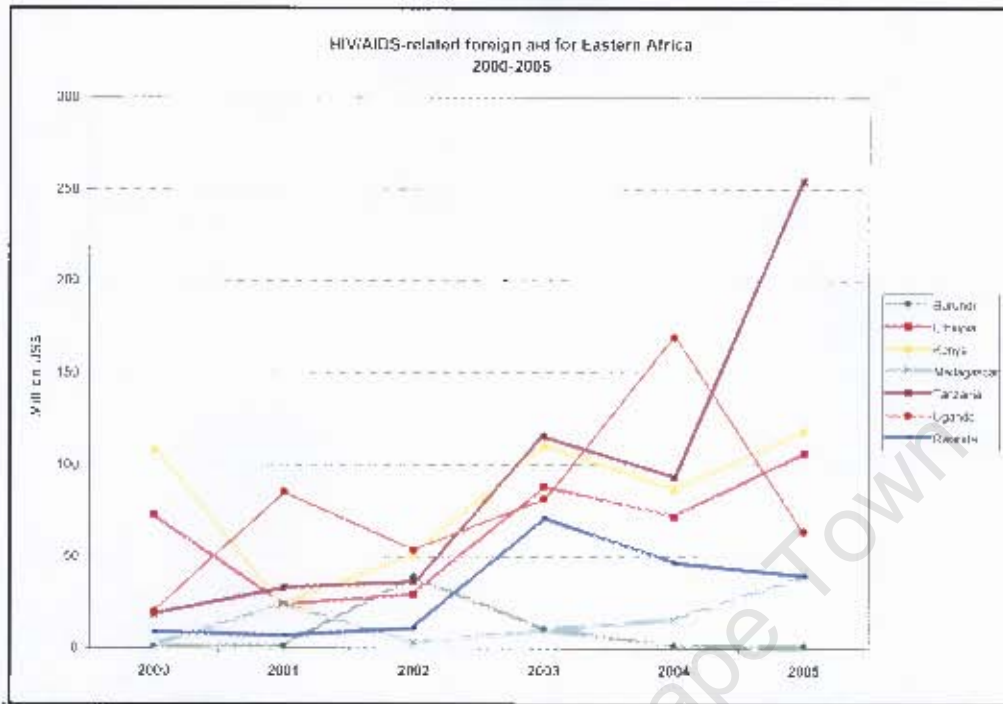


Figure 20: Trend of HIV/AIDS related foreign aid 2000-2005 in Eastern Africa



Source: OECD/DAC [www.oecd.org/dac/stats/crs/hivaids](http://www.oecd.org/dac/stats/crs/hivaids)

## Appendix C: State Capacity Index and Data

Table 9: State Capacity Data 1996

Country	State Capacity 1996 Real GDP per capita (PPPS) 1997 (HDR, 1999)
Botswana	7690
Burkina Faso	1010
Congo, DR	880
Cote d'Ivoire	1840
Ethiopia	510
Ghana	1640
Kenya	1190
Malawi	710
Mali	740
Mozambique	740
Namibia	5010
Nigeria	920
Senegal	1730
Tanzania	580
Uganda	1160
Zambia	960
Zimbabwe	2350

Source: UNDP (1999)

**Table 10: State Capacity Data 2003**

Country	State Capacity 2003/4 Real GDP per capita (PPPS) 2003 (HDR 2005)
Angola	2344
Benin	1115
Botswana	8714
Burkina Faso	1174
Burundi	648
Cameroon	2118
Chad	1210
Congo	965
Congo, Dem. Rep.	697
Cote d'Ivoire	1476
Ethiopia	711
Ghana	2238
Kenya	1037
Lesotho	2561
Madagascar	809
Malawi	605
Mali	994
Mozambique	1117
Namibia	6180
Nigeria	1050
Rwanda	1268
South Africa	1648
Senegal	10346
Swaziland	4726
Tanzania	621
Togo	1696
Uganda	1457
Zambia	877
Zimbabwe	2443

Source: UNDP (2005)

## Appendix D: Governance Index and Data

Table 11: World Bank Governance Data 1996

Country	Voice and Acct.	Political Stability	Government effectiveness	Regulatory quality	Rule of Law	Control for Corruption	1996 Index
Angola	-1.5	-2.35	-1.33	-1.46	-1.5	-1.06	-1.53
Benin	0.7	0.98	-0.02	0.12	-0.05	-0.82	0.15
Botswana	0.69	0.66	0.45	0.6	0.76	0.45	0.6
Burkina Faso	-0.54	-0.41	-0.71	-0.38	-0.81	-0.32	-0.53
Burundi	-1.34	-2	-0.98	-1.33	-0.24	-0.86	-1.13
Cameroon	-1.12	-1.18	-1.11	-0.83	-1.24	-1.17	-1.11
Chad	-0.83	-0.91	-0.66	-0.01	-0.24	-0.9	-0.59
Congo	-1.33	-0.93	-1.19	-0.84	-1.33	-0.86	-1.08
Congo DR	-1.29	-2	-1.72	-2.24	-1.89	-2.13	-1.88
Cote d'Ivoire	-0.25	0.02	0.05	-0.13	-0.74	0.46	-0.1
Ethiopia	-0.68	-0.9	-0.55	-1.31	-0.32	-1.05	-0.8
Ghana	-0.41	-0.11	0.05	0	-0.17	-0.49	-0.19
Kenya	-0.56	-0.65	-0.64	-0.43	-0.83	-1.12	-0.71
Lesotho	-0.04	0.78	0.09	-0.72	-0.36	0.14	-0.02
Madagascar	0.21	-0.07	-0.95	-0.08	-0.9	0.41	-0.23
Malawi	-0.5	-0.16	-0.67	-0.39	-0.25	-1.05	-0.5
Mali	0.26	0.45	-0.72	0.12	-0.83	-0.32	-0.17
Mozambique	-0.26	-0.59	-0.54	-1.07	-1.29	-0.54	-0.72
Namibia	0.46	0.62	0.25	-0.03	0.32	0.85	0.41
Nigeria	1.57	-1.75	-1.26	-1.02	-1.26	-1.28	-0.83
Rwanda	-1.48	-1.46	-1.24	-1.11	-0.24	-0.61	-1.02
Senegal	-0.23	-0.78	-0.32	-0.53	-0.22	-0.4	-0.41
S Africa	0.62	-1.17	0.53	0.16	0.31	0.7	0.19
Swaziland	-1.35	-0.04	-0.39	-0.01	0.35	-0.13	-0.26
Tanzania	0.85	-0.2	-1.2	-0.35	-0.75	-1.1	-0.46
Togo	-1.14	-0.72	-0.75	-0.36	-1.29	-0.105	-0.73
Uganda	-0.71	-1.35	-0.39	0.14	-0.93	-0.54	-0.63
Zambia	-0.23	-0.66	-0.75	0.31	-0.4	-1.04	-0.46
Zimbabwe	-0.37	-0.38	-0.03	-0.81	0.28	-0.11	-0.33

Source: World Bank (2006)

**Table 12: Governance 1996 Correlations Matrix**

	Voice and Acct.	Political Stability	Government effectiveness	Regulatory quality	Rule of Law	Control for Corruption
Voice and Acct.	1					
Political Stability	.489**	1				
Government effectiveness	.416**	.646**	1			
Regulatory quality	.460*	.660**	.644**	1		
Rule of Law	0.291	.520**	.745**	.589**	1	
Control for Corruption	0.323	.560**	.759**	.592**	.558**	1

\* 90% confidence

\* 95% confidence

\*\* 99% confidence

N = 16

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Table 13: Governance Index Data 2003

Country	Voice and Acct.	Political Stability	Government effectiveness	Regulatory quality	Rule of Law	Control for Corruption	2003 Index
Angola	-1.13	-0.91	-1.05	-1.28	-1.34	-1.21	-1.15
Benin	0.48	0.3	-0.42	-0.62	-0.51	-0.42	-0.2
Botswana	0.69	0.74	0.72	0.81	0.71	0.98	0.78
Burkina Faso	-0.28	-0.2	-0.61	-0.3	-0.49	0.04	-0.31
Burundi	-0.28	-0.2	-0.61	-0.3	-0.49	0.04	-0.31
Cameroon	-1.16	-0.7	-0.58	-0.75	-1.02	-1.12	-0.89
Chad	1	-1.39	-0.78	-0.84	-1.09	-1.12	-1.04
Congo	-0.75	1.66	-1.36	-1.2	-1.23	-1.02	-1.2
Congo DR	-1.62	-2	-1.91	-2.7	-1.69	-1.36	-1.88
Cote d'Ivoire	-1.35	-2.1	-0.97	-0.71	-1.4	-1.08	-1.27
Ethiopia	-1.08	-1.24	-0.79	-1.09	-0.73	-0.78	-0.95
Ghana	0.35	-0.04	-0.3	-0.22	-0.21	-0.27	-0.12
Kenya	-0.29	-1.1	-0.65	-0.27	-1.06	-0.94	-0.72
Lesotho	0.22	0.24	-0.35	-0.6	-0.21	-0.31	0.17
Madagascar	-0.06	0.16	-0.34	-0.04	-0.25	0.07	-0.08
Malawi	-0.34	-0.26	-0.72	-0.32	-0.33	-0.84	-0.47
Mali	0.35	-0.17	-0.39	-0.41	-0.19	-0.35	-0.19
Mozambique	-0.1	0.31	-0.48	-0.46	-0.71	-0.8	-0.37
Namibia	0.33	0.28	0.15	0.16	0.19	0.1	0.2
Nigeria	-0.65	-1.65	-0.87	-1.24	-1.55	-1.27	-1.21
Rwanda	-1.36	-1.09	-0.66	-0.68	-0.85	-0.47	-0.85
Senegal	0.82	-0.25	-0.64	0.56	0.07	0.33	-0.2
South Africa	0.24	-0.38	-0.23	-0.2	-0.23	-0.42	0.15
Swaziland	-1.26	-0.08	-0.79	-0.5	-0.8	-0.55	-0.66
Tanzania	-0.25	-0.51	-0.4	-0.33	-0.5	-0.73	-0.45
Togo	-1.11	-0.46	-1.27	-0.65	-0.99	-0.87	-0.89
Uganda	-0.78	-1.48	-0.41	0.06	-0.68	-0.81	-0.68
Zambia	-0.38	-0.07	-0.87	-0.59	-0.61	-0.85	-0.56
Zimbabwe	-1.62	-1.77	-1.17	-2.2	-1.54	-1.23	-1.59

Source: World Bank (2006)

**Table 14: Governance 2003 Correlation Matrix**

	Voice and Acct.	Political Stability	Government effectiveness	Regulatory quality	Rule of Law	Control for Corruption
Voice and Acct.	1					
Political Stability	.758**	1				
Government effectiveness	.735**	.707**	1			
Regulatory quality	.737**	.680**	.819**	1		
Rule of Law	.846**	.834**	.852**	.842**	1	
Control for Corruption	.750**	.745**	.760**	.773**	.899**	1

° 90% confidence

\* 95% confidence

\*\* 99% confidence

N = 29

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## Appendix E: International Country Codes

Table 15: International Country Codes

Country	Country code
Angola	AO
Benin	BJ
Botswana	BW
Burkina Faso	BF
Burundi	BI
Cameroon	CM
Chad	TD
Congo	CG
Congo DR	CD
Cote d'Ivoire	CI
Ethiopia	ET
Ghana	GH
Kenya	KE
Lesotho	LS
Madagascar	MG
Malawi	MW
Mali	ML
Mozambique	MZ
Namibia	NA
Nigeria	NG
Rwanda	RW
South Africa	ZA
Senegal	SN
Swaziland	SZ
Tanzania	TZ
Togo	TG
Uganda	UG
Zambia	ZM
Zimbabwe	ZW

## **Appendix F: Dichotomizing variables**

An explanation of the methodology used to dichotomize the contextual variables will be provided in this appendix. The classification of the contextual variables will be as follows: high state capacity or low state capacity, good governance or poor governance, and more idealism in AIDS governance or less idealism in AIDS governance. I use data from 2003 because I assess HARFA at this time point. In order to dichotomize the variables, I use the mean of the sample. Countries above the mean of the logged measurement of state capacity (3.18) are considered countries with high state capacity; whereas countries below the mean are categorized as low state capacity. The governance variable is measured on an interval scale from -2.5 to 2.5, however this sample only falls between -1.88 to .78. I will use the mean of the sample (-0.6) to assign “good governance” for countries above the mean and “poor governance” if below the median. For the AIDS governance variable, countries with a score below the mean (64 percent) will be considered to have less idealism in AIDS governance where as countries above the median will have more idealism.