

# To End an Epidemic:

## A Study of Foreign Aid and HIV/AIDS

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**Abstract:** Since 1995 the United States has provided foreign aid to countries with the specific purpose of alleviating the HIV/AIDS epidemic. The United Nations and World Bank have provided similar aid programs to countries afflicted by the disease. In 2000, the United Nations pledged an increase in this aid as part of its Millennium Development Goals and the United States quickly followed suit by expanding its foreign aid donations directed at HIV/AIDS burdened countries. At first glance, this seems like an encouraging development in the fight against an epidemic that has devastated many parts of the world. However, existing literature on the political motivations of foreign aid donors and recipients and the ineffectiveness of international organizations alludes to the fact that this increase in aid may not be as promising or effective as it seems. This study will look at HIV/AIDS-specific foreign aid given by the United States and the World Bank in order to understand how this aid is most effectively allocated and by whom. This study will also explore existing theory on how government type and political motivations affect foreign aid, looking at whether the theory that aid is given to buy political concessions encompasses not only economic and military aid, but humanitarian aid as well.

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## **I. Introduction**

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In September 2000, the United Nations introduced its Millennium Development Goals, a series of objectives aimed at alleviating poverty and improving quality of life across the globe.<sup>1</sup> The sixth of these goals outlined a plan to aggressively combat HIV/AIDS and reverse the spread of the disease by 2015 by increasing aid, grants and loans to afflicted countries. Two years later, President Bush reiterated the need to combat the epidemic by creating The President's Emergency Plan for AIDS Relief (PEPFAR), which guaranteed an increase in foreign aid intended for countries fighting HIV/AIDS. The United States has been giving this type of aid since 1995.<sup>2</sup>

From a humanitarian perspective, these commitments seem a promising step towards alleviating an epidemic that has killed millions of individuals and left countries devastated. However, within the study of foreign aid, the prospect of these declarations does not seem so altruistic or hopeful. Works like Bueno de Mesquita and Smith's "Foreign Aid and Policy Concessions" argue that foreign aid given by democratic governments is not given selflessly to assist underdeveloped countries, but rather is given to buy policy concessions, typically from autocratic governments. At the same time, economists argue that the World Bank and other international organizations do not efficiently use development funds, wasting money intended to alleviate problems, like HIV/AIDS, on inflated bureaucracies and misdirected programs. This paper will look at whether the United States and the World Bank are giving aid to countries who are most in need and who will use the aid most effectively to combat the disease .

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<sup>1</sup> <http://www.un.org/millenniumgoals/>

<sup>2</sup> <http://www.whitehouse.gov/infocus/hivaids/>

If these perceptions of foreign aid are true, then the money given as part of the Millennium Development Goals and PEPFAR are wasted funds and it is inevitable that the HIV/AIDS epidemic will continue to go unaddressed. At the same time, one must wonder how critical we should be of any aid being given to prevent the spread of HIV/AIDS, as the disease is so closely linked to underdevelopment and poverty.<sup>3</sup> It is possible to argue that any amount of money can be of assistance and should be applauded. In 2005, over 38 million people worldwide were infected with the disease, which killed almost 3 million and yet only twenty percent of the world's population receives any treatment.<sup>4</sup> Treatment is often inaccessible and very expensive. The World Health Organization estimates that it costs \$1,500 per person per year to treat HIV/AIDS and that about \$1 billion is necessary each year to properly address the epidemic worldwide.<sup>5</sup>

It is therefore necessary to test how aid intended to reduce the effects of the HIV/AIDS epidemic is being allocated in order to ensure that funding is going to those most in need and who will turn the aid into the most effective programs and resources to fight the spread of the disease. This study also provides a study of the present theory on how foreign aid is allocated in exchange for political concessions. By looking at aid given for a specific humanitarian issue, the HIV/AIDS epidemic, without the white noise of aid for economic and military aid, it will be clear whether the United States uses political aims as the primary motivation for foreign aid, regardless of the aid's intended purpose.

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<sup>3</sup> Poku (2002)

<sup>4</sup> UNAIDS Global Fact Sheet. See [www.unaids.org](http://www.unaids.org)

<sup>5</sup> Easterly (2006)

The paper is constructed as follows. I will first present existing theories on foreign aid and how the political structure of both the donor and recipient countries affect the probability of receiving aid and the amount of aid received. I will then extend this analysis of existing literature to look at economic studies of the World Bank and international organizations in order to determine the procedures they use to allocate aid and the decisions that affect their policy. To make my study as comprehensive and thorough as possible, I will also review literature on how the disease spreads and what factors perpetuate the epidemic. Combining the insight offered by these areas of literature, I will then present a series of hypotheses on how HIV/AIDS foreign aid is allocated by the United States and by the World Bank and explain the design for my empirical study which will test my predictions. This will include a discussion of the variables that I have selected for my model. I will then use this data to run a series of statistical regressions and then draw connections between the results from my data, whether or not they support my hypotheses, and how this correlates to existing theory on foreign aid and the HIV/AIDS epidemic. Before concluding my study on foreign aid and HIV/AIDS, I will discuss areas for future research that need to be considered in order to further understanding of the effectiveness of foreign aid specific to HIV/AIDS and the way in which leaders and organizations allocate aid in general.

## **II. Literature Review**

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### *Selectorate Model*

The selectorate model operates under the assumption that leaders will act and make decisions based on what is necessary to remain in power.<sup>6</sup> To do so, a leader must

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<sup>6</sup> Bueno de Mesquita, et al (2003)

appease the minimum number of constituents that will prevent him or her from being removed from office. These people are the leader's winning coalition. The winning coalition is drawn from the nation's selectorate, people who have the potential to be part of the winning coalition and have an "institutional say in who can become a leader." The leader is able to reward his winning coalition with a mix of private and public goods, and will decide this mix based on the size of the winning coalition (W) in proportion to the size of the selectorate (S). The smaller 'W' is in relation to 'S' (as is the case of autocratic governments), the more private goods will be used because the value of direct payments divided among a small group of individuals (W) is greater than the value of non-excludable public goods administered to the entire population. When W and S are both large (in the case of a democracy), non-excludable public goods offer the most value to the winning coalition because the value of private goods divided out to each member would be minimal given the winning coalition's large size.<sup>7</sup> Within this model, improved health systems and education intended to curb the HIV/AIDS epidemic would be considered non-exclusive public goods. Therefore, it is arguable that, within a democratic state, one would be more likely to observe funds used for preventative and treatment programs that would alleviate the epidemic than within an autocratic government.

However, there is another layer to the selectorate model that addresses who gives and who receives foreign aid. Foreign aid is one source of income that funds a leader's mix of public goods.<sup>8</sup> Foreign aid can be used by countries to purchase political concessions, exchanging payment for a policy favorable to that country. The recipient

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<sup>7</sup> Ibid.

<sup>8</sup> Bueno de Mesquita and Smith (2004)

nation will then use some portion of the aid that it receives towards securing their position in office. Following the logic of the selectorate model, political concessions, which are public goods, are most desirable for democratic nations, and so democracies are most likely to be foreign aid donors.

Among recipients, small W autocratic nations have a smaller number of individuals to pay off than large W states who must pay for more public goods to stay in power.<sup>9</sup> Following this logic, it is less expensive to buy political concessions from small W states than large W ones and so small W nations will be most likely to receive foreign aid. However, in the instance that a large W nation is a recipient of foreign aid, it will receive substantially more aid than its small W counterpart.

I use this theory in order to examine whether or not foreign aid allocation for HIV/AIDS is politically motivated. However, it is important to make a distinction between my study of foreign aid and that of Bueno de Mesquita and Smith. Although they recognize in their study that existing literature divides foreign aid into two categories, the first category being aid for economic and military assistance and the second for humanitarian causes, they only examine foreign aid as a whole.<sup>10</sup> This study will look at aid that falls within the second category, humanitarian aid, in order to determine whether foreign aid is as explicitly politically motivated as Bueno de Mesquita and Smith suggest. By looking at such a specific type of foreign aid, it will be easier to tell if the money is being sent to the countries that most need the funds.

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<sup>9</sup> Ibid.

<sup>10</sup> Ibid.

## *Economics*

HIV/AIDS is inextricably linked to the wealth of a country.<sup>11</sup> For one, development is affected by the epidemic. Workforces are depleted because of high rates of death and illness, which in turn strain GDP and tax revenues. This further burdens governments required to reallocate sparse funds in order to control the disease.<sup>12</sup> In addition, under-development also perpetuates and heightens the magnitude of the epidemic. Poku (2002) examines the effects that poverty has on the spread of HIV/AIDS. Because of poor nutrition, physical labor, and reduced access to healthcare, individuals in under-developed countries are not only unable to combat HIV/AIDS once infected, but are also more susceptible to infection than those living in developed countries because of the stresses brought on by a lower quality of life.<sup>13</sup> Poku argues that because of this, funds to address the HIV/AIDS epidemic are misdirected because they solely focus on education and treatment. While necessary, these programs do not efficiently address the whole of the problem. Poku argues that donors must focus on funding the development of HIV/AIDS afflicted countries in order to contain the spread of the disease.<sup>14</sup>

Easterly (2006) shares Poku's sentiment that HIV/AIDS funding is misappropriated. In his critique of the World Bank, World Health Organization and the United Nations, Easterly argues that funds are wasted on inefficient and unfocused bureaucracies instead of being invested in entrepreneurial and efficient programs and organizations.<sup>15</sup> While international organizations are typically successful in handling international health crises, this has not been the case with the HIV/AIDS epidemic.

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<sup>11</sup> Greener (2002)

<sup>12</sup> Ibid.

<sup>13</sup> Poku (2002)

<sup>14</sup> Ibid.

<sup>15</sup> Easterly (2006)

Despite accurate projections made by epidemiologists of the impending severity of the epidemic, the World Bank had only implemented one program by 1993 and had only completed ten HIV/AIDS projects by 1998.<sup>16</sup> This failure to act allowed the epidemic to escalate to the levels it is at today. Even existing programs appear to be ineffective as they place far more focus on uncontroversial projects, like funding expensive pharmaceutical and treatment programs, instead of far less expensive projects, like prevention education, that could decrease the rate of infection.

Although he argues that money is wasted by misguided programs and the bureaucracies of the organizations themselves, Easterly also points out the public and private goods dilemma of foreign aid outlined by Bueno de Mesquita and Smith. He offers examples of small W governments, like the Cameroon, that misappropriate aid and sell donated medicine and treatment supplies on the black market.<sup>17</sup> Clearly not just financial assistance, but even material donations, is turned into private goods within autocratic systems instead of getting to those who are most in need of treatment, but not essential to the leader to remain in power.

Easterly offers extensive case studies and examples of failures by international organizations to manage the HIV/AIDS epidemic. In this paper I intend to test empirically whether these inefficiencies and misallocations are the norm.

### *Epidemiology*

The rise or decline in the incidence of HIV/AIDS is clearly not determined solely by foreign aid or political institutions. It is therefore necessary to look at the reports of

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<sup>16</sup> Ibid

<sup>17</sup> Ibid.

epidemiologists in order to understand the conditions that cause the disease to escalate and remain at epidemic levels. These conditions are, ideally, what governments and foreign donors would alleviate through aid and public goods and, within the context of this paper, are variables that must be controlled for.

In developed nations anti-retroviral therapy and highly active anti-retroviral therapy (ART and HAART, respectively) have led to a dramatic decrease in the death rate of HIV/AIDS patients as well as an increase in their quality of life. However, these treatments are incredibly expensive and must be meticulously administered and tested in order to be effective.<sup>18</sup> Within the context of those developing nations where levels of infection are highest, access to these drugs is limited due to their high cost. Also, regular access to healthcare professionals, testing materials and the medicines themselves is limited because of poor infrastructure, which prohibits safe transport and delivery of medicine, and an overextended healthcare system.<sup>19</sup> Without consistent and correct use of ART and HAART medication, the virus is not contained and in fact becomes resistant to the medication, making the outbreak worse.<sup>20</sup>

In countries with high levels of HIV/AIDS infections, the healthcare system typically is under-funded from the beginning and becomes exhausted as the number of cases increases and as health workers themselves become infected. This leaves nations without an effectively operating healthcare system.<sup>21</sup> This culminates into not only a lack of treatment for those infected, but also leaves other health needs unmet, resulting in individuals whose immune systems are weakened by other diseases like malaria and

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<sup>18</sup> Ronald and Sande (2006)

<sup>19</sup> Whiteside (2002)

<sup>20</sup> Ronald and Sande (2006)

<sup>21</sup> Whiteside (2002)

tuberculosis and are in turn more susceptible to contracting HIV/AIDS and less likely to survive once infected.<sup>22</sup>

### **III. Research Design**

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In the study by Bueno de Mesquita and Smith, democratic countries, such as the United States, are more likely to give foreign aid to small W, less democratic nations in exchange for policy concessions. However, this study only considers foreign aid donations as a whole, even though there are many types of foreign aid within a nation's entire aid budget. By looking at donations given for the specific purpose of managing HIV/AIDS, a specifically humanitarian issue in which democracies would be theoretically more likely to use the aid for public goods, I hope to gain insight into the extent with which foreign aid donations are motivated by political gains. By looking at aid for a humanitarian issue without the white noise of aid for defense or trade, it will be clear whether the United States uses political aims as the motivation for foreign aid regardless of the aid's intended purpose. Studying this will allow us to see whether foreign aid donations are an effective method of addressing the HIV/AIDS epidemic and should be further endorsed, or if they act as a front for buying concessions from small W countries.

Based on the model presented by Bueno de Mesquita and Smith, that foreign aid is given by large W countries to small W countries in exchange for concessions, I expect to see that funds given by the United States to manage the HIV/AIDS epidemic will be directed at the wrong countries. This leads me to the first hypothesis:

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<sup>22</sup> Poku (2002)

***Hypothesis 1:** US foreign aid donations given to treat HIV/AIDS will be more likely to go to small W countries. That is, a negative correlation exists between the size of W and the probability of receiving this foreign aid from the United States. As the size of W decreases, the probability of receiving aid increases.*

At the same time, another key piece of the Bueno de Mesquita and Smith research is the fact that although small W countries are more likely to receive aid, if large W countries do receive any aid, that aid will be proportionately more than its small W counterpart receives. This leads to the second hypothesis:

***Hypothesis 2:** Countries with larger W systems, when they do receive aid from the United States to treat HIV/AIDS, receive more aid than small W countries. There is a positive correlation between the amount of aid given and the size of W.*

As an international organization, the World Bank should not be motivated by the need for political concessions in exchange for aid. Given Easterly's examples of small W countries who misappropriated donated funds, it is logical to assume that the World Bank will be more likely to give aid to large W countries that will use the money effectively. This leads to the third hypotheses:

***Hypothesis 3:** The World Bank will be more likely to give foreign aid to countries that are more democratic. There is a positive correlation between the size of W and foreign aid. As the size of W increases, the probability of receiving aid and the amount of aid received will both increase.*

More importantly though, the lack of political motivation should mean that the amount of aid given by the World Bank, and whether or not any aid is given at all, should

be determined by the level of development and by the incidence of HIV/AIDS. This leads to the final two hypotheses:

***Hypothesis 4:** There is a positive correlation between the incidence of HIV/AIDS and the amount of aid given by the World Bank. As the incidence of HIV/AIDS increases in a country, the probability that that country will receive aid and the amount of aid they receive increases.*

***Hypothesis 5:** There is a negative correlation between the wealth of a country and aid given by the World Bank. As a country becomes poorer, the probability that a country will receive aid from the World Bank and the amount of aid received will increase.*

#### **IV. A Description of the Data**

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The time period that I examine in this study is from 1995 to 1999, as 1995 is the first year that the United States began providing aid to countries and 1999 is the last year for which there are consistent compiled statistics on both reported HIV/AIDS cases and regime type. **Table 1** lists the variables used in this dataset and their descriptive statistics.

To measure foreign aid given by the United States and the World Bank, I have included two variables. One measures the actual dollar amount of the donation. The amount of aid given by the United States comes from the US Agency for International Development (USAID).<sup>23</sup> These fact sheets are broken down by dollar amount given to each country per year. The data on aid provided by the World Bank comes from the report “Evaluating the World Bank’s Assistance for Fighting the HIV/AIDS Epidemic,”

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<sup>23</sup> See [http://www.usaid.gov/our\\_work/global\\_health/aids/Funding/FactSheets](http://www.usaid.gov/our_work/global_health/aids/Funding/FactSheets)

generated by an independent evaluation group on behalf of the World Bank.<sup>24</sup> Unlike the USAID data, these numbers are not broken down by year, but per program, so in order to effectively compare these two sources of aid, I have summed together the United States' aid donations from the four years INCLUDED in this study. As a result, this data will be examined USING a cross-sectional analysis. For all variables in which data is provided per year, I will either use the mean or the sum of the data, as appropriate, to represent trends across the four years I am investigating. To make analysis of the data easier, I have also taken the natural logarithm of all of these numbers. The amount of aid given by the United States is demonstrated by the variable "US Donations," meaning the natural logarithm of the sum of aid given from 1995 to 1999. For the World Bank, this variable is "World Bank Donations."

To analyze more thoroughly the theory on foreign aid provided by Bueno de Mesquita and Smith, I have also generated a binary variable that will test whether or not a country receives any aid. Their theory argues that although Large W countries will rarely receive aid in comparison to Small W countries, when they do, the amount of aid will be considerably larger than that given to a Small W country.<sup>25</sup> Therefore, Looking solely at the amount of aid given would skew our sample and not illustrate how government type effects the probability of receiving aid. This binary variable, labeled "Received US Aid" for recipients of US foreign aid, and "Received World Bank Aid" for recipients of World Bank aid, allows us to look at not only the amount of money donated to each recipient country, but also what types of countries are receiving the aid; if they are underdeveloped and in need of aid, and if they are Large or Small W political systems.

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<sup>24</sup> [http://www.worldbank.org/oed/aids/main\\_report.html](http://www.worldbank.org/oed/aids/main_report.html)

<sup>25</sup> Bueno de Mesquita and Smith (2004)

Since the period of time being analyzed occurs prior to the implementation of the Millennium Development Goals, this study does not enjoy the extensive research and indicators on HIV/AIDS that are now available. Instead, the only available statistics on HIV/AIDS prior to 2001 are the number of cases reported by each country, made available by UNAIDS and the World Health Organization.<sup>26</sup> The variable used for HIV/AIDS cases is the number of reported cases in 1995, the beginning of my sample. This variable is “Aids Cases in 1995.” I have chosen this number instead of an average of reported cases across the four years or the total number of cases during the examined period because this study is concerned with the decision to give aid. The number of cases in 1995 reflects the information that both the World Bank and the United States would have had available to them at the beginning of this period and would have used to determine their aid allocation.

The data on winning coalition size comes from The Logic of Political Survival. In this work, Bueno de Mesquita, et. al. coded each country with a score that divides the Winning Coalition size by the Selectorate Size to determine the level of democracy within each country. This score ranges from 0 to 1, with the level of democracy increasing as  $W$  over  $S$  approaches 1. My variable for political structure is the average level of democracy across the four years of this study (Level of Democracy ( $W$  over  $S$ )).

As the literature indicates, the development level of a country has a significant and direct impact on the severity of the HIV/AIDS outbreak.<sup>27</sup> In this study, development is taken into account by including the mean of the GDP expressed in terms of purchasing power parity, provided by the World Bank (Average GDP Purchasing

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<sup>26</sup> See <http://www.who.int/globalatlas/dataQuery/reportData.asp?rptType=1>

<sup>27</sup> Easterly (2006), Poku (2002)

Power Parity).<sup>28</sup> To account for the effects that healthcare and education have on controlling the spread of the disease, as explained in the medical research, I have included variables that demonstrate the condition of each country's healthcare system from the World Bank's World Development Indicators.<sup>29</sup> These include the number of healthcare expenditure in the country per person and infant mortality rates ("Average Health Expenditure Per Person" and "Infant Mortality"). To account for the effects that infrastructure and accessibility to medication and treatment have on the disease,<sup>30</sup> I have controlled for the amount of accessible roads (km) within the country (Roads Network).

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<sup>28</sup> See <http://devdata.worldbank.org/dataonline/>

<sup>29</sup> Ibid.

<sup>30</sup> Ibid.

**Table 1: Descriptions of the Variables**

<b>Variable</b>	<b>Obs</b>	<b>Mean</b>	<b>Std. Dev.</b>	<b>Min</b>	<b>Max</b>
US Donations	850	.3706568	1.060543	-3.218876	3.261935
World Bank Donations	850	.1515879	.7892763	-2.995732	5.126936
Received US Aid	850	.2352941	.4244322	0	1
Received World Bank Aid	850	.1411765	.3484085	0	1
Aids Cases in 1995	850	4.212983	2.877739	0	11.15471
Level of Democracy (W over S)	800	-.5072601	.4661688	-1.895696	.0014235
Average GDP Purchasing Power Parity	770	7.54576	1.580819	4.782985	10.77871
Average Health Expenditure Per Person	690	5.383301	.382374	12.197225	8.287478
Infant Mortality	820	3.294686	1.064469	1.308333	5.151363
Roads Network	812	29.58841	3.073539	20.57841	40.60061

**Table 2: Recipients of Aid**

<b>Dependent: Received Aid (Y/N)</b>	<b>US Donation</b>	<b>World Bank Donation</b>
<b>Number of AIDS Cases in 1995</b>	.282 (.113)	.160 (.110)
<b>Winning Coalition Size Divided by Selectorate Size</b>	2.442 (.755)	-.278 (.604)
<b>GDP Purchasing Power Parity</b>	-1.192 (.566)	-.773 (.583)
<b>Health Expenditure</b>	.550 (.598)	.267 (.625)
<b>Infant Mortality</b>	1.410 (.615)	.138 (.566)
<b>Roads Network (km)</b>	.086 (.092)	.100 (.091)
<b>Pseudo R-Squared</b>	0.3924	0.1677
<b>Number of Observations</b>	136	136

These results are significant at the p<.05% level

**Table 3: Amount of Aid Received**

<b>Dependent: Amount of Aid (\$)</b>	<b>US Donation</b>	<b>World Bank Donation</b>
<b>Number of AIDS Cases in 1995</b>	.287 (.098)	.260 (.150)
<b>Winning Coalition Size Divided by Selectorate Size</b>	1.676 (.623)	-.591 (.887)
<b>GDP Purchasing Power Parity</b>	-1.31 (.549)	-1.491 (.938)
<b>Health Expenditure</b>	.815 (.553)	1.379 (.920)
<b>Infant Mortality</b>	1.357 (.622)	.291 (.927)
<b>Roads Network (km)</b>	.146 (.090)	.225 (.146)
<b>Pseudo R-Squared</b>	0.251	0.140
<b>Number of Observations</b>	136	136

These results are significant at the p<.05% level

## V. Results and Findings

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To test the hypotheses on foreign aid allocation, I ran two different types of statistical tests, a logit and a tobit test, to determine what factors affect who receives aid and how much aid is given. The results of these tests are shown in **Table 2 and Table 3**.

### *Who Receives Aid?*

**Table 2** looks at **Hypotheses 1, 3, 4 and 5** to determine what conditions must be present for a state to receive aid. In order for **Hypothesis 1** to be true, I must see a negative correlation between the size of W over S and the likelihood of receiving aid from the United States. For **Hypothesis 3** to be true, I should see the opposite relationship between the size of W over S and the likelihood of receiving aid from the World Bank (a positive correlation should exist). **Hypotheses 4 and 5** pertain to the likelihood of receiving aid from the World Bank. For **Hypotheses 4** to be true, I should see a positive correlation between the likelihood of receiving aid and the number of HIV/AIDS cases. **Hypotheses 5** will be true if there is a negative correlation between the likelihood of receiving aid and the level of GDP.<sup>31</sup> To test these hypotheses, I ran two separate logit tests, one for the World Bank and one for the United States, using my binary variable that notes whether or not a state received aid. I have included the results of both tests in the same table so that it is possible to compare the results and determine whether the World Bank or the United States is more likely to donate to those countries in need of aid.

The results of these tests are surprising. Although the hypotheses predicted that the World Bank would be more likely to give aid to those countries most in need, the

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<sup>31</sup> Note, that since the theory by BDM and Smith argues that policy concessions are the motivating factor in foreign aid donations, there should be no relationship between the likelihood of receiving aid and the level of GDP, the incidence of HIV/AIDS or any of the factors being controlled for.

logit tests demonstrate the contrary. In fact, the United States is more effective at giving aid to countries dealing with a large number of HIV/AIDS cases than the World Bank. For example, if a country's probability of receiving aid from the United States is at  $p=0.5$  and the incidence of HIV/AIDS increases by a unit of 1, then the likelihood of receiving aid will increase by .0705, whereas under the same conditions, the likelihood of receiving aid from the World Bank only increases by .04. (These results are significant at the  $p<.05\%$  level). This means that although **Hypothesis 4** is true, that there is a positive correlation between the incidence of HIV/AIDS and the likelihood of receiving aid from the World Bank, the United States is actually more responsive to the incidence of HIV/AIDS with its foreign aid donations.

The United States is also better at giving aid to poorer countries. As predicted in **Hypothesis 5**, as GDP decreases, the probability of receiving aid from the World Bank increases. But again, the United States is more responsive to poverty in its allocation of aid. When a country's probability of receiving aid is  $p=0.5$ , a one unit decrease in GDP leads to a 0.298 increase in the probability of receiving aid, while under the same conditions, the likelihood of receiving aid from the World Bank only increases by 0.183. (These results are true at the  $p<.05\%$  level).

However, the most compelling of these results lies in the effect that regime type has on the likelihood of receiving aid. **Hypothesis 1**, based on the foreign aid model of Bueno de Mesquita and Smith, is rejected by this test, as were the predictions in **Hypothesis 3**, that the World Bank would be more likely to give aid to large W, democratic countries. Instead, the United States is very effective at giving aid to large W nations. When a country's probability of receiving aid is  $p=0.5$ , a one unit increase in the

size of W over S, leads to a 0.611 increase in the probability of receiving aid. The reverse is true for the World Bank, where under the same conditions, a one unit increase in the size of W over S leads to a -0.077 decrease in the likelihood of receiving aid. (These results are significant at the  $p < .05\%$  level). According to this test, the United States is better than the World Bank at giving aid to democratic countries who, according to the theory, will convert this aid into public goods to address the HIV/AIDS epidemic.

The remainder of the results, meant to control for infrastructure and healthcare within the recipient nation, correspond with the above findings. The United States and World Bank are both more likely to give funds to countries with effective healthcare programs in place, as these countries are probably more likely to effectively use these funds.<sup>32</sup> The United States once again is more likely than the World Bank to give funds to countries that spend more on healthcare. The same is true with infrastructure, as countries with a more extensive network of roads are more likely to receive aid, but in this case the World Bank is slightly more likely than the United States to give aid to countries with a better road network. Considering the rate of infant mortality, included to control for the condition of the recipient countries' health systems, the United States is significantly more likely to give aid than the World Bank to countries with a high level of infant mortality.

### ***Who Receives the Most Aid?***

The next sets of tests, described in **Table 4**, were tobit tests that looked at what influenced the amount of aid given to each country. A tobit accounts for the fact that

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<sup>32</sup> Although, there is possible endogeneity in these findings as it could be the donations that lead to the higher health expenditures

most of the countries in the data did not receive aid (countries with high GDP, with low incidence of HIV/AIDS, etc.), allowing for an analysis that looks more closely at the countries that did receive aid and determining what trends exist within them. I ran this test for two reasons. First, this will allow me to test **Hypotheses 2**, based on the Bueno de Mesquita and Smith theory, which predicts that countries with a large  $W$  will receive more aid than those with a smaller  $W$ . Also, during the period analyzed the World Bank gave aid to fewer countries than the United States. This tobit test will examine whether the results of the logit test were skewed because of this; meaning that the World Bank was actually focusing most of its money on the worse cases instead of spreading it out among many countries.

The results of the tobit tests show that **Hypothesis 2** is true, countries with a large  $W$  political system receive more aid than those with a small  $W$ . At the same time, a negative correlation exists between regime type and the amount of aid given by the World Bank. These findings are disconcerting because, as the literature insists, large  $W$  countries use more foreign aid for public goods. If the World Bank gives more funds to small  $W$  countries, these funds are being wasted and, as Easterly suggests in his work, never reach the individuals who most need them.

The remaining results from the tobit tests correspond with the findings generated by the logit tests. However, the tobit tests show that the gap between the amount of aid the United States gives to each country and the amount that the World Bank donates is narrower than the gap between the likelihood of receiving aid from the United States and from the World Bank. For example, when looking directly at the data, the World Bank gives a significant amount of aid to Brazil, a country which has a comprehensive and

effective HIV/AIDS program which has systems in place to utilize the World Bank's funds.<sup>33</sup> The tobit test suggests that although the World Bank gives funds to fewer countries, the results of the logit test does exaggerate somewhat the discrepancy between the United States and the World Bank and the effectiveness of the donations they make.

### *The Good and the Bad News*

These tests produced some startling results that contradict the hypotheses generated from the literature on foreign aid and international organizations. Although Bueno de Mesquita and Smith demonstrate that large W countries are more likely to give foreign aid as a whole to small W countries, when looking at a specifically humanitarian issue, the United States seems to be successful in its aid allocation. Funds are given to countries most in need of aid, both due to poverty levels and the incidence of HIV/AIDS, and the United States is also giving this money to large W countries that will, according to the theory, convert the funds into public goods. As a result, it would seem that the aid given by the United States is effectively targeted and likely to be used efficiently to address the epidemic. These results are promising when trying to understand how best to approach the HIV/AIDS problem and suggest that the increase in funds made by President Bush in 2003 will be similarly productive in treating those affected.<sup>34</sup>

On the other hand, it seems the dismal inefficiency of the World Bank described by Easterly is in fact true. The World Bank is allocating more money to countries with small W systems who are, theoretically, less likely to use these funds for public goods

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<sup>33</sup> Bollinger and Stover (2002).

<sup>34</sup> These results support only the President's increase in funds that will be given directly to the country. The effectiveness of money given to NGOs and treatment and prevention programs needs to be studied as well, given that a substantial amount of money in the PEPFAR program goes to these programs.

like education programs, treatment and improved healthcare. Also alarming is the fact that the World Bank does not do as well as the United States in targeting aid to countries most in need of funding. It seems that the World Bank's donations are not only lacking, as Easterly suggests, but misdirected as well.

## **VI. Problems and Possible Future Study** \_\_\_\_\_

Although the results of these tests offer compelling insight into the effectiveness of foreign aid, the reader should be aware of certain problems within the data. The most glaring of these pertains to the numbers used to test the incidence of HIV/AIDS. Because the time period studied occurred prior to the introduction of the Millennium Development Goals, this study does not have the luxury of the extensive research and data gathered on HIV/AIDS that exists from 2003 to the present. Instead, the only country specific data available from 1995 to 1999 was the number of cases reported by the countries themselves. This creates a possible sample selection problem because countries that are most likely to accurately report the number of HIV/AIDS cases are those wealthy enough to devote resources to gathering this data. Furthermore, countries funding the gathering of accurate data on the incidence of HIV/AIDS are, according to theory, most likely to be democratic, as health studies like this are a public good. It would be interesting to return to this study in the future when there is several years' worth of data in existence gathered by the United Nations, using the MDG indicators, and observe whether the trends observed here remain the same.

An important area of concern that was not studied in this paper due to the absence of sufficient historical data is the effectiveness of the aid. Although we've demonstrated

that the United States is more effective at giving aid than the World Bank to poor countries with a high incidence of HIV/AIDS and higher levels of democratization, it is unclear whether the United States or the World Bank has a more significant impact in decreasing the incidence of HIV/AIDS. According to the selectorate model, large W countries are more likely to put foreign aid towards public goods and, according to Easterly, a substantial part of World Bank funds are wasted on bureaucracy and inefficient programs. Logic would have us believe that aid from the United States, therefore, is more effective at decreasing the incidence of AIDS, but this is impossible to prove without further empirical study.

To gain a better understanding of what is the most effective way of containing the epidemic, there is also a need to empirically test the efficiency of funds donated to treat HIV/AIDS, but not given as cash directly to the countries themselves. These include United Nations programs, NGOs and medicine and treatment programs. Easterly argues that many of these programs are too removed from the problem themselves and the funds are often wasted. It would be interesting to do a comparison of funds used by the World Bank to maintain programs that deal with the disease and aid given directly to the countries themselves. It would be interesting to do this with US donations as well, given that a portion of PEPFAR goes to funding NGOs and treatment programs.

What is necessary is a more extensive understanding of the most effective and efficient way of allocating funds, given the severity of the epidemic and the limited funds available (although ideally, there would also be a substantial increase in the amount of resources directed towards the epidemic).

## VII. Conclusion

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The intent of this paper was to understand whether the United States allocates foreign aid in exchange for policy concessions, even when the aid is directed at the HIV/AIDS epidemic, which is humanitarian in nature. The results were not as dismal as expected. In fact, the United States proved to give aid to those countries most in need and to invest in countries that would use aid most efficiently.

The results, unfortunately, were not as promising for the World Bank. The international organization is less likely to give funds to countries that will use the money efficiently and are less effective than the United States at directing funds towards those countries that need the aid most.

This paper shows that the truth about the United States foreign aid program is perhaps not so grim, but that the World Bank and World Health Organizations have in many ways misdirected their efforts. However, until the objectives of the Millennium Development Goals are realized, and the epidemic is contained and reduced, it is my hope that more attention is given to this issue and that we will continue to see further improvement in both the way foreign aid is allocated to treat the disease and in the amount of aid that is given.

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US Foreign Aid data on HIV/AIDS can be downloaded from

[http://www.usaid.gov/our\\_work/global\\_health/aids/Funding/FactSheets](http://www.usaid.gov/our_work/global_health/aids/Funding/FactSheets)

“Evaluating the World Bank’s Assistance for Fighting the HIV/AIDS Epidemic” data can be downloaded from [http://www.worldbank.org/oed/aids/main\\_report.html](http://www.worldbank.org/oed/aids/main_report.html)

“World Bank Development Indicators,” can be downloaded from <http://web.worldbank.org>.