

Wealth Alone does not Buy Health: State Capacity, Democracy, and the Spread of AIDS

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ABSTRACT:

AIDS is a devastating problem for many developing countries, especially in Africa and Asia. Globally, over 40 million people have been diagnosed as HIV positive. Despite the numerous studies and reports on deaths due to AIDS, its epidemiological features, and its relationship to poverty and development, few studies to date have systematically analyzed how political factors and policies may help curtail the spread of AIDS. In this paper, we consider how a variety of domestic factors influence HIV infection rates across countries. We argue that states with higher state capacity tend to slow down the spread of HIV/AIDS epidemic. Moreover, we argue that democracies tend to be more responsive to the needs of the population and can be more efficient in curtailing the spread of HIV/AIDS. We empirically evaluate our hypotheses using a cross-sectional times series sample of 117 countries. Although preliminary, our empirical results indicate that state capacity is related to levels of HIV/AIDS infection rates. There is also evidence that democracy and HIV/AIDS infection rates have a reversed U-curve relationship. More systematic research, linking infectious diseases with political variables is required to understand the impact of epidemics on state's ability to govern and vice versa.

1.0. Introduction

Communicable diseases, such as tuberculosis, measles, hepatitis, Human Immunodeficiency Virus (HIV), SARS, and Ebola, have been a persistent curse of human welfare since ancient times. In the case of severe communicable diseases that spread in particularly contagious manner or are difficult to treat, the illness is not a mere health problem for the individuals affected.

Widespread outbreaks of infectious diseases can also have large social and political consequences. Indeed, many epidemics have been sufficiently lethal to generate deaths and impacts similar to those of major wars in the international system. And just as war is ultimately a political outcome, political factors can help shape and prevent the spread of communicable diseases and limit their pernicious consequences.

We start, by way of introduction, by a brief overview of the wider political consequences of communicable diseases and epidemics. Perhaps the first well recorded historical example of an influential outbreak of disease was the plague that devastated Athens during the first years of the Peloponnesian War, killing the elected leader Pericles among many others, and thereby notably weakening the city-state. Thucydides (1972) provides an extensive description of the loss of civic ethic and social disintegration that followed the outbreak of the plague. More recent cases of communicable diseases, such as the Bubonic Plague (14th-17th century) and Influenza (1918),

also known as the Spanish flu, killed millions and decimated the population of whole cities.¹

Communicable or infectious diseases not only reduce the power of states, but also alter the distribution of wealth as they kill people not possessions. In some cases after the Black Death, there were records of higher levels of spending and consolidation of wealth in the hands of middle class and away from landowners. Similarly, there was an increase in communal violence against specific ethnic or religious groups (Encarta, 2004).

Despite the political, economic, and social impact of communicable diseases there are no studies that explore the impact that political and institutional variables might have on the spread of epidemics across countries. Similarly, there are no studies that comprehensively look at the impact of communicable diseases on state institutions and governance. In this paper, we attempt to fill this gap and we focus on the AIDS epidemic. We primarily look at the impact that state capacity and levels of democracy have on the spread of AIDS and vice versa.

In this paper we argue that high levels of state capacity increase the effectiveness of state institutions in dealing with communicable diseases or building preventive measures that slow down the spreading of the disease.

¹ The Bubonic Plague first appeared in the 1300's and continued until 1600's. In the first five years of the "Black Death", Europe lost 25 million people or one-third of its population at the time. Powerful countries of the 14th century, such as Norway, where the urban and mostly literate population was wiped out, declined in power; while new countries emerged as great powers. Similarly, Influenza was considered as the cause of death of 20 to 40 million people in one year, more than the lives claimed by the Great War. In some respects, the outcome of the Great War was also attributed to the impact of Influenza; as Germany and the Austro-Hungarian Empire were the first countries to face the deadly virus. The actual numbers of deaths were probably much higher for both sides, as most countries had an interest in underreporting the actual extent of the outbreak.

Clearly, this is a two way relationship, where we expect countries with high levels of capacity to be able to control communicable diseases, even though they will eventually suffer a reduction in their ability to govern depending on the type of losses in human capital that the society suffers in the long-run.

The ability of states to respond to changing economic environments is constrained or enhanced by a state's *political capacity*, or a state's ability to implement and enforce policies. Although state capacity in principle could be envisioned and measured along many different dimensions, Arbetman and Kugler (1997, 12) hold that revenue extraction is a particularly important aspect of state capacity, as this measurement indicates a government's political reach or power to influence its citizens. States that have greater extractive capacity are more efficient in implementing their chosen policies. The higher is the actual tax raised then these states can clearly assemble and command more resources. The actual level of extraction relative to the potential will also tap whether a state has effective means of influencing the life of its citizens and the ability to enforce its policies.

We use panel data so we can capture the changes over time in new incidents of AIDS. Our sample includes 117 countries, both developed and developing. A first look at the infection rates since 1982 indicates that the AIDS epidemic spread out very slowly in the 1980s in most countries. In the 1990s the occurrence of new AIDS incidents in countries essentially bifurcated into two distinct trajectories. Most of the developed countries and some of the developing countries were able to limit the spread of AIDS to new individuals, while other countries failed completely in preventing new

outbreaks. In the process, according to our results, democratic political institutions and state capacity influence the ability of states to respond to the new epidemic.

In section 2 we briefly discuss the current status of the AIDS epidemic and we build our argument linking political institutions and state capacity to the implementation of policies that might reduce the spread of the epidemic. In section 3 we discuss our data and methodology and we present our empirical analysis. Two cases studies are discussed in section 4. Concluding remarks follow in section 5.

2.0.: Democracy, State Capacity, and AIDS

2.1. A Case of Communicable Diseases: AIDS

The AIDS epidemic first appeared in early 1980s in the USA and initially struck the gay community. Very soon the epidemic was spread out to women, while in the last ten years it has been prevalent in poor communities, the inner cities of developed societies, and developing countries.² AIDS stands for acquired Immune Deficiency Syndrome. People infected with the HIV virus can appear and be healthy for many years before the symptoms appear. As the virus attacks the immune system the infected individual can be open to many illnesses, like pneumonia, usually the main cause of death. Since the individual who has the virus might not be aware of the fact, he/she can transmit the virus to other individuals for a long period of time.

² The spread of AIDS is attributed to unsafe sexual behavior, which continues among younger generations, and inject-drug use.

Based on the World Health Organization (WHO) statistics and the Joint United Nations Program on HIV/AIDS (UNAIDS), it is estimated that 40 million people are infected globally. Out of the 40 million, 25-28 million live in Africa. Eastern Europe, Central Asia, and Latin America follow in infection rates (approximately 1.3 to 1.9 million for all three areas). These numbers are underestimated according to the new estimates and methods applied by WHO (UNAIDS/WHO, 2003).³

According to UNAIDS/WHO the epidemic continues to spread infecting 5 million people annually, despite increasing awareness and political commitment in implementing policies that will curtail the spread. Besides the sub-Saharan Africa where whole generations are in danger of being wiped out there is concern for the spread of the epidemic in countries such as Brazil, India, China, and Russia, which did not have presence of HIV virus until very recently.⁴ If the crisis in Africa expands in these countries, the consequences for the global economy and trade can be devastating, due to the size of these economies (UNAIDS/WHO, 2003).

One of the major concerns regarding AIDS is that it affects young people, ages 20-40 years.⁵ Hence, the epidemic affects the most productive segment of the population, having serious economic implications. The highest infection rate has Botswana where a 39% of the population is

³ UNAIDS and WHO have applied improved surveillance and census data to measure the extent of the epidemic. The new estimates, although show that the 2002 estimates were exaggerated, do indicate a continuous increase in the infection rates.

⁴ After 2001, China has stopped denying incidents of AIDS in the country.

⁵ In Eastern Europe and the former Soviet Republics, such as Kazakhstan and Uzbekistan, the spread of HIV has reached the proportion of an epidemic. Most of the victims are young people, less than 30 years old; whereas in Western Europe young people are only a small portion of the new incidents of infection. The spread is primarily attributed to drug use and secondarily to unsafe sex.

infected. Zimbabwe follows in infection rates, where 25% of the population is infected, adjusted from 34% of the population according to the statistics presented at the 2001 census. Lesotho, Namibia, South Africa, Swaziland, and Zambia have 20% of their population infected. Despite positive signs in the African continent, such as the reduction by 8% of the infection rates in the urban centers of Uganda, the epidemic does not level off. Similarly, in Zambia the infection of young women has dropped by 4% between the years 1996-1999 (BBC, 2002).

Infection rates are very high among women, especially women of childbirth age in countries where heterosexual relations are the main way of HIV transmission. This is the case in Africa and the Middle East. In some cases, such as sub-Saharan Africa and the Middle East, women are more than 50% of the victims infected with HIV compared to 25% in Western Europe. The spread of the epidemic in women is partly attributed to ignorance about the transmission of the virus and health issues. In fact, more than 80% of young women are unaware of the availability of preventive measures. Even in cases where women are informed of the ways that HIV is transmitted, traditional views regarding the role of women and their reproductive rights prevail over policies to protect young women and mothers (BBC, 2002). As a result, HIV/AIDS is the leading cause of premature death and loss of health for women globally (Krug et al. 2002).

According to UNAIDS/WHO policies that hamper the spread of AIDS should include preventive care. Although most countries are increasingly come to grip with the impact that AIDS/HIV can have in whole regions, denial

and stigma still undermine efforts to improve surveillance and regional cooperation. Policies that diffuse the blame, so specific groups are not targeted, are an essential component for any successful strategy that deals with the spread of HIV/AIDS.

In more traditional societies, the fear of public reaction and short-term political cost considerations, due to anti-epidemic policies, prevail over any attempts by governments to address the health issues (UNAIDS/WHO, 2003: 27). Hence, the political decision to implement policies that control the spread of HIV/AIDS depends on the ability of governments to bear significant political costs. Efficient governance and enforcement of policies are characteristics of a state with high state capacity as we discuss in the following section.

2.2. State Capacity, Political Institutions, and AIDS

The study of demographic transitions and the impact of communicable diseases on population have been studied within the fields of demography and medicine, but there have been few studies that explore the impact that changes in the structure of population have on state's capacity to govern or whether states can change population trends (Feng, Kugler, and Zak, 2000). Many social and political processes, such as reduction in fertility rates and increase in life expectancy, that are often considered a mere by product of general economic development vary depending on political capacity and strategies. Organiski, Kulger, Johnson, & Cohen (1984) show how political factors influence the speed with which countries pass the demographic transition stage, over and beyond what can be attributed to their economic

development. Most studies on state capacity look at conflict and economic factors, regional and global, and their impact on the ability of states to respond to crisis and provide for their citizens. The impact of communicable diseases is another dimension that we explore in this paper.

The influence of infectious disease's on states' stability and prosperity is discussed by Andrew Price-Smith (2001). Price-Smith, following the tradition of Homer-Dixon, examines how differences in health or the prevalence of communicable diseases influence environmental security or national security concerns broadly defined. He argues that infectious diseases can cause poverty and might increase political instability, especially when vulnerable segments of the populations are targeted, e.g. the Jews in Europe during the Bubonic Plague (Price-Smith, 2001). Hence, global communicable diseases threaten the ability of states to govern themselves and their economic prosperity.

In this study we follow a similar line of argument. As we can see from the current AIDS data or from data on other communicable diseases, such as SARS, tuberculosis, developed countries are much better equipped in dealing with outbursts and avoiding the spread of devastating diseases. High levels of state capacity, that is the ability of states to penetrate society, increase the effectiveness of the state institutions in dealing with communicable diseases or building preventive measures that slow down the spreading of the disease. So we expect countries with high levels of capacity to be able to control communicable diseases, even though they will eventually suffer a reduction in their capacity to govern.

H1: The higher a states relative political capacity, the fewer new AIDS incidents.

Nevertheless, as Price-Smith points out outbreaks of communicable diseases reduce state capacity. Communicable diseases are easily spread out in urban centers, due to population density, and can alter the structure of the economy imposing a formidable burden on state institutions. The expectation is, therefore, that countries which suffer from infectious diseases will also experience a decline in the ability of the state to respond and provide for the population.

H2: The higher is the spread of AIDS, the lower is the state capacity of a country.

Although the decline in state capacity should be evident in all countries, developed and developing, countries with high levels of state capacity already start at a higher level of institutional efficiency than weaker states. Hence, strong and efficient countries should be able to maintain functioning state mechanisms and to absorb the costs of the infectious disease. Moreover, countries with higher levels of state capacity should also be able to impose policies that might bear significant short-term political costs to avoid the long-term implications of the communicable disease. Policies that target communicable diseases like AIDS can be divided into two groups: prevention and treatment.

Preventive policies attempt to reduce the occurrence of new incidents, while the availability of treatment increases the survival of the people already infected. Precautionary measures are more important in ending an epidemic

and in the case of AIDS that includes education of the population to practice safe sex through the use of condoms or abstinence, empowerment of women, building-up a supportive network for those infected from the virus, while protecting those who are not yet infected, and training the medical personnel to use gloves (plastic) and other protective equipment, while they treat patients. Many of the preventive policies need to be sensitive to the culture and traditions of the specific region. The role of state is to coordinate and enforce all efforts and programs, even those that challenge local perceptions and practices, e.g. in traditional societies women have limited control over their reproductive and property rights. States with high levels of state capacity should accordingly be able to promote AIDS prevention programs and lead to a reduction of the infection rates.

A strong and efficient state should also be responsive to the needs of the population, as often the victims of infectious diseases are the poorest segments of the population. Democratic political systems tend to be more responsive to public needs; hence, the second component of our research focuses on the impact that the political system has on both state capacity and the spread of the communicable disease.

2.3. Political System and Infection Rates

In democracies political elites need to accommodate and satisfy a larger part of the electorate. Hence, they are more responsive to the needs of the population, and especially the needs of the weaker and poorer segments of the population (Bueno de Mesquita and Root, 2000; Bueno de Mesquita et al., 1999). As a result, democracies distribute more public goods,

such as public health. Lake and Baum (2003) argue that democracies tend to improve health and living conditions and lead to higher life-expectancies and improvement of human capital. In the case of communicable diseases democracies might increase health expenditures in response to the threat of an epidemic. Vaccines, other forms of preventive care, as well as, antiretroviral medication that increases the life-span of the infected individuals tend to be more widely available in responsive political systems.

USA is an interesting case of state responsiveness and capacity. Although in the first stages of AIDS epidemic in the USA the federal government (Reagan administration) did little to address the pending epidemic, public pressure and the organization of interest groups led to changes in policies in the following decades. Currently, AIDS Drug Assistance Programs (ADAPs) provide life-saving HIV treatments to low income, uninsured and underinsured individuals living with HIV/AIDS in all 50 states, the District of Columbia, the Commonwealth of Puerto Rico, the U.S. Virgin Islands, three U.S. Pacific Territories (Guam, the Commonwealth of the Northern Mariana Islands, and American Samoa) and one Associated Jurisdiction (the Republic of the Marshall Islands). Even though federal funding has not always been sufficient leading ADAPs to impose restrictions on who can have access to the medication, the results have been dramatic in the survival rates of AIDS victims and the ability to reduce the spread of the epidemic. The slower trend in the USA infection rates becomes clear in Figure I.

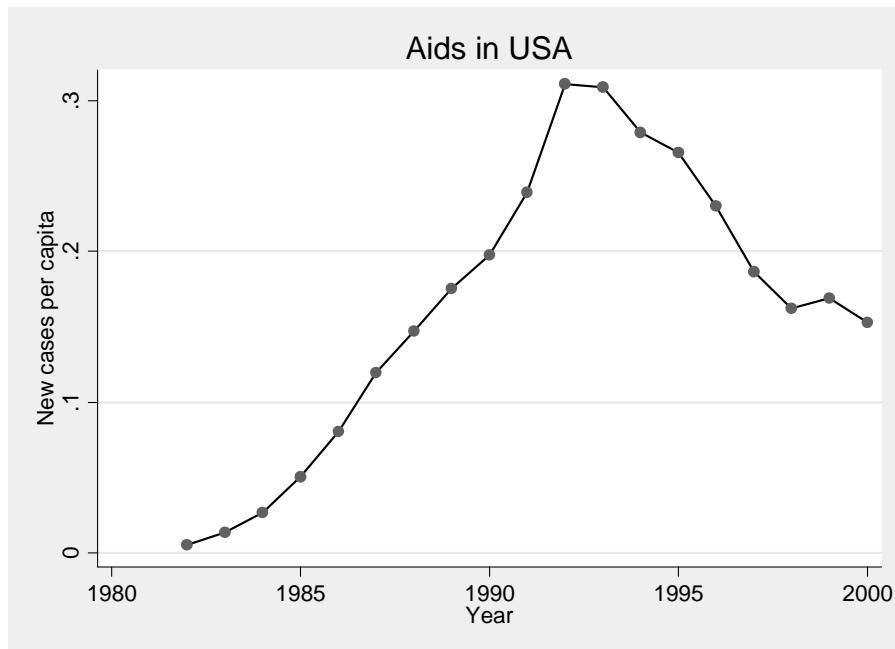


Figure I: New AIDS incidents in the USA 1987-2002

New AIDS incidents peaked in the early '90s. After 1992, there is a steady decline in infection rates. While the increasing life-expectancy of the HIV/AIDS infected individuals depends on the availability of the current medications, the slower rate of infection is attributed to increasing public awareness of how the virus is transmitted from person to person.

Mature and developed democracies have a clear advantage in containing communicable diseases, partly because of resources that they can spend in public health and preventive medicine and partly because they have strong enough states to enforce the necessary steps to curb the trends of an infectious disease.

Things are more complicated when it comes to developing countries. We use the arguments from the conflict literature, where a reverse U-curve is observed between political system and levels of violence (Mueller and Weede, 1990; Benson and Kugler, 1998), to discuss how democracy is related

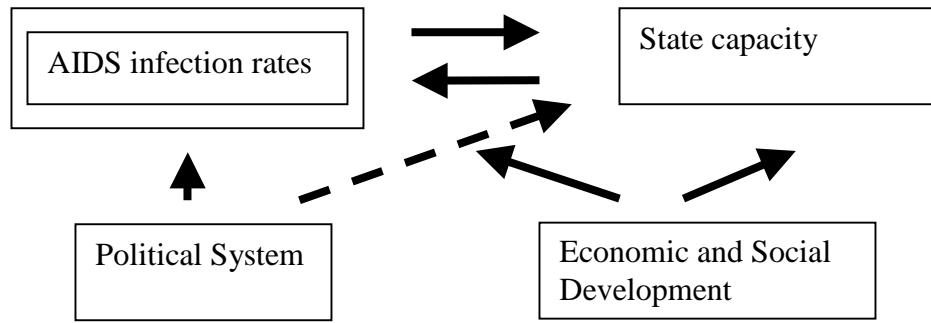
to the spread of AIDS in countries that vary with respect to economic development. The least democratic and the most democratic societies tend to have lower levels of violence. Countries which are unstable democracies or experience a political transition are the most prone to violent conflict. Similarly, we argue that countries which are authoritarian but have strong state capacity can be able to enforce the necessary policies to hamper the spread of an infectious disease. While the benefits of a consistent campaign to prevent the spread of AIDS are broadly distributed, the political cost of policies that are sound in designing but problematic within the cultural context of the society, e.g. education of women to use condoms, can be concentrated for a government. Authoritarian regimes can afford to pay little attention to public opinion, while in countries with unstable and highly inefficient political systems governments are expected to weigh more the political cost that certain policies might entail.

H3: Democratic countries have higher levels of state capacity and lower spread of AIDS.

H4: Countries ranking either high on democracy or high on authoritarianism have higher levels of state capacity and lower spread of AIDS.

The argument linking state capacity and the political system to AIDS infection rates is presented in Figure II.

Figure II: Graphic Representation of the Argument



3.0.: Empirical Analysis

To estimate the four hypotheses we use a time series cross sectional estimation model, so we can study not only differences in infection rates across countries, but also across time. Our goal is to investigate the impact that the political system and state capacity have on the spread of infectious diseases, and most specifically AIDS. We examine if democracies and states with high levels of state capacity can introduce and implement policies that can reduce the infection rates in their population. Our data set includes a 14-years (1987-2000) panel of 117 countries, both developed and developing. We have annual data for our dependent variable.

3.1. AIDS infection rates and State Capacity

To study the spread of AIDS we use annual data on new incidents of infection. The data is available from 1982 to 2000 and it is provided by UNAIDS and WHO. Although the flow of new incidents gives us information as to the ways that the HIV/AIDS spreads, it does not give us sufficient information as to whether the new incidents indicate a new trend in a country at any year or the spread is the outcome of prior high levels of infection.

Eventually, for more accurate estimates regarding the evolution of the HIV/AIDS we need to have annual stock data as well. Unfortunately, it is difficult to get hold of annual data on the stock of individuals infected with AIDS. Moreover, for the needs of our estimation model we divide the infection numbers by population for every year, to get the per capita rate of infection for each country, which we are using in this analysis.

As a measurement of state capacity, we use political extraction, which involves the ability of a government to gather necessary resources to implement its policies. Political extraction is estimated using the ratio of a state's actual government revenue to the predicted revenue.⁶ The estimated ratio is a measurement of the ability of governments to penetrate society and to extract resources. States that have higher levels of political extraction are more efficient to implement policies, not only because they acquire more resources, but also because the state mechanisms are more efficient in accessing the population. The estimates of state capacity are available for the years 1960-2000.

One of the drawbacks of the data is that there is no information for some of the Eastern European and former Soviet Union countries. This is partly due to insufficient or inaccurate information on taxation and government spending prior to 1992. Even with this omission, the data set provides us with annual data on political extraction in 152 countries. The data on state capacity were kindly provided by Jacek Kugler.

⁶ The predicted revenue is estimated using the following regression equation: Tax/GDP= $\beta_0 + \beta_1(\text{time}) + \beta_2(\text{mining} / \text{GDP}) + \beta_3(\text{agricultural} / \text{GDP}) + \beta_4(\text{Exports} / \text{GDP}) + \varepsilon$ (Kugler et al. 1998-2001).

3.2. Levels of Democracy and Control Variables

We assume that a democratic regime will be more responsive to the demands of the population to address epidemics, due to the political considerations. Moreover, democracies tend to have higher levels of health expenditures and education (Lake and Baum, 2001). In this paper, we use DEMOC from Polity IV to measure if the political system is a democracy or not. DEMOC combines six factors to measure the minimal institutional practices that constitute democracy (e.g. constraints on the executive, competitiveness of executive recruitment). This measurement reflects only the institutional characteristics of the political system, rather than substantive elements of a democratic political system (e.g. levels of corruption and black market that absorb resources from the public sector) (Marshall and Jagers, 2002).

Corruption is especially important when governments receive funds from International Organizations and Non-governmental organizations. Often, these sources do not reach their designated target audience. Nevertheless, cross sectional data on corruption are scarce, limiting our ability to take such a factor into consideration. As we include state capacity in our sample, which captures the ability of governments to collect taxes and extract resources, indirectly we do account for the presence of black market and corruption within a country. Aside from the raw DEMOC score, we also include the square of the DEMOC variable to emulate a non-linear relationship between levels of democracy and rates of new AIDS infections.

We introduce three control variables in our model. The spread of AIDS, especially in the case of heterosexual relationships, is attributed to lack of information and education. Literacy (percentage of population over 15 years of age, which is literate) can facilitate campaigns that promote prevention against HIV/AIDS. Literacy is also one of the three components of Human Development Index and reflects the level of social development and human capital within a country. Although literacy rates are often related to economic development, this is not always the case in developing countries. A good example is Sri Lanka, with literacy rates close to those of developed countries. Real GDP per capita and literacy rates have correlation 0.68, which indicates that the two measurements can capture similar but not identical social conditions and trends. The data on literacy rates is annual and it is provided by the *World Development Indicators* and *Cross-National Time-Series Data Archive* (Banks 1979), updated by Feng (Feng, Kugler, and Zak, 1998-2001).

GDP per capita in 1996 is used to measure the levels of development, as countries with higher levels of economic resources can spend more on research, prevention, and health. GDP per capita data is taken from the *Penn World Tables*, v. 6. In addition, we use health expenditures as a percentage of GDP to investigate whether higher levels of health expenditures can have any effect on the spread of HIV/AIDS. Health expenditures partly reflect economic wealth, health expenditures and GDP correlate positively (.56), but also political choices in the distribution of state resources towards public goods. The data on health expenditures is annual

and provided by the *World Development Indicators*. To ensure as many observations as possible per each country and accuracy as to AIDS infection rate estimates, we look only at the period 1987-2000.

3.3. Methodology

Since this is a first attempt in instigating the systematic relationship between the spread of AIDS, state capacity, and levels of democracy, we use two separate equations, one for AIDS infection rates (equation 1) and one for State capacity (equation 2).

$$\text{AIDS Infection Rates} = \alpha + \beta_1(\text{State Capacity}) + \beta_2(\text{Democracy}) + \beta_3(\text{Democracy square}) + \beta_4(\text{literacy rate}) + \beta_5(\text{health expenditures}) + \beta_6(\text{GDPpercapita96}) + \varepsilon \quad (1)$$

$$\text{State Capacity} = \alpha + \beta_1(\text{AIDS Infection Rates}) + \beta_2(\text{Democracy}) + \beta_3(\text{Democracy square}) + \beta_4(\text{literacy rate}) + \beta_5(\text{health expenditures}) + \beta_6(\text{GDPpercapita96}) + \varepsilon \quad (2)$$

To decide whether a fixed or random effects model specification is appropriate, we performed a Hausman test, where a fixed effects estimator which is consistent but inefficient is compared to a random effects estimator that is more efficient but potentially inconsistent. The Hausmann test did not indicate any violation of the assumptions required for the random effects estimator. Hence, we report only the results from the random effects specification.

3.4. Results

A preliminary exploration of the data (not shown here) indicates that in most countries HIV/AIDS infection rates increased steadily but not very fast in the early years that the disease was identified. The most dramatic increase in infection rates is noted in the late 1980s and peak in the early 1990s. After the

years 1992-93 there are two different trajectories. Some countries are able to control the spread and reduce the number of new incidents, while other countries, like Congo or Botswana, loose control and the infection becomes an epidemic.

According to our first model, where new AIDS' infection rate normalized by population is the dependent variable, we expect that states with higher levels of state capacity and democratic political system should have lower numbers of new HIV/AIDS incidents (H1 and H3). As we see in Table 1, the model supports H1. Clearly, state capacity has negative and significant effect on the spread of HIV/AIDS. The estimated model indicates the existence of a reverse U-curve, similar to the one identified in the political violence literature, in the relation between democracy and infection rates. Countries, which score high in the democracy index (8-10) or very low (0-3), seem to do a better job in hampering the spread of the infectious disease. Leaders in countries with institutions combining democratic and autocratic features that are more prone to instability, however, appear to weigh the short-term political costs of enacting effective preventive policies and hence do a much worse job in containing the spread of HIV/AIDS.

The other control variables, e.g. GDP per capita in 1996 and literacy rates, appear to have no systematic impact on HIV/AIDS infection rates, while health expenditures have a marginally positive effect on infection rates. This is surprising, as the expectation is that economic development should guarantee resources to fight the spread of the communicable disease. This surprising result could indicate that countries, which have higher incidents of

AIDS, spend more resources in the health sector all other things being equal. The lack of any impact of GDP per capita on the spread of HIV/AIDS suggests that developing countries with high levels of state capacity can successfully fight the spread of the epidemic, as the cases of Uganda and Zambia show.

Table 1: Impact of Political System and State Capacity on the Spread of AIDS: Random-Effects GLS Regression

Spread of AIDS	Coefficient	Std.Error	z	P> z
Democracy	0.024	0.008	3.070	0.002
Democracy square	-0.002	0.001	-1.940	0.053
% of Literacy (over 15)	0.000	0.001	-0.050	0.961
Health expenditures (% of GDP)	0.636	0.454	1.400	0.161
GDP per capita 96	0.000	0.000	-0.780	0.435
State Capacity	-0.036	0.015	-2.480	0.013
Constant	0.065	0.044	1.490	0.136
N = 1705, Wald chi2(df6+) = 36.49				

Table 2, which presents Model (2) and the impact of HIV/AIDS spread on state capacity, provides support to H2. The more HIV/AIDS spreads, the lower is the ability of the governments to efficiently govern and state power is ultimately eroded. This empirical result is also consistent with the historical cases of the Bubonic Plague and the Plague in Athens during the first years of the Peloponnesian war. To better understand the impact of infectious diseases on state capacity, we need, however, to include annual stock levels in our analysis. The infection rate can be very high within a time period, but the overall cases of infected individuals can be very low as a percentage of the total population; hence, the states might be less responsive to the occurrence of new incidents.

The empirical results are also consistent with H4, as the relationship between democracy and state capacity has a U-curve. Authoritarian and Democratic political systems have higher levels of state capacity, controlling for the impact of the spread of an infectious disease. Similarly, health expenditures have a positive and significant impact on state capacity. Even though countries that experience high levels of infection rates tend to spend more on health expenditures, according to the empirical analysis in Table 1, these public expenditures also increase their state capacity, controlling for the spread of HIV/AIDS.

GDP per capita has no impact on state capacity. A possible interpretation of this result is that the level of economic development of a country has an indirect effect on the state's ability to fight the spread of a communicable disease. The indirect effect of GDP might be captured by higher levels of health expenditures, which increase state capacity. Literacy rates, however, have a very surprising negative effect on state capacity. Even though it is early to conclude that literacy is irrelevant to the containment of an infectious disease, we need to develop a better understanding as to what drives the spread of an infectious disease and we do require stock data in addition to the flow of an epidemic.

**Table 2: Impact of Political System and Spread of AIDS on Political Capacity:
Random-Effects GLS Regression**

State Capacity	Coefficient	Std. Error	z	P> z
Spread of AIDS	-0.098	0.040	-2.480	0.013
Democracy	-0.041	0.013	-3.200	0.001
Democracy Square	0.003	0.002	2.140	0.033
% Literacy (over 15)	-0.004	0.001	-3.080	0.002
Health expenditures (% of GDP)	1.902	0.749	2.540	0.011
GDP per capita '96	0.000	0.000	-0.250	0.799
Constant	1.288	0.082	15.730	0.000

N = 1705, Wald chi2(6) = 57.31

These preliminary results can also be illustrated by the comparative cases of Uganda and Congo, two developing countries which follow drastically different trajectories in the spread of HIV/AIDS. We choose Uganda because it is a developing, non-democratic country, which has a remarkable reduction of HIV/AIDS infection rates. Congo, on the other hand, is a case of failed state, where state capacity is very low and AIDS infection rates very high.

4.0.: The Cases of Uganda and Congo

As Figure III shows AIDS infection rates in Congo increase without any indication that will be an improvement in the near future. AIDS incidents did not occur or at least were not reported until 1985. Infection rates in Congo started in a slow pace, similar to most countries. Nevertheless, what makes the situation in Congo tragic is that the infection rates increase non-stop (notice the steep slope of the line in Figure III). Simultaneously, state capacity continuously drops (see Figure IV). As the empirical results indicate the drop in state capacity preceded the spread of HIV/AIDS epidemic.

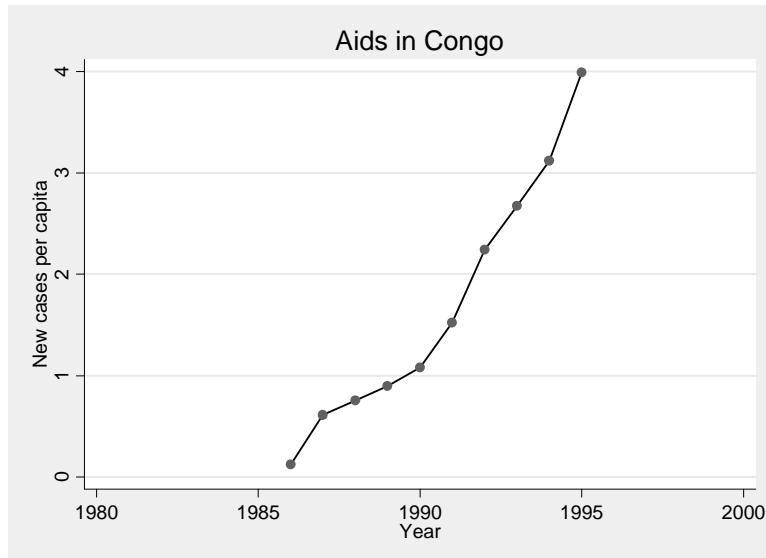


Figure III: AIDS in Congo

As we mentioned earlier, Congo is a failed state that has experienced a vicious civil war for more than twenty years. So the reduction in state capacity can be attributed to the presence of conflict in the country. The spread of AIDS, especially due to massive rapes by the soldiers among whom 60% is considered infected with HIV, reinforces the political consequences of the civil war. Eventually, the decimation of the younger generations will even further undermine any chances that the state of Congo has to recover. In a similar trend, because of its very low state capacity the country of Congo cannot respond to the spread of the epidemic, entering a new vicious circle.

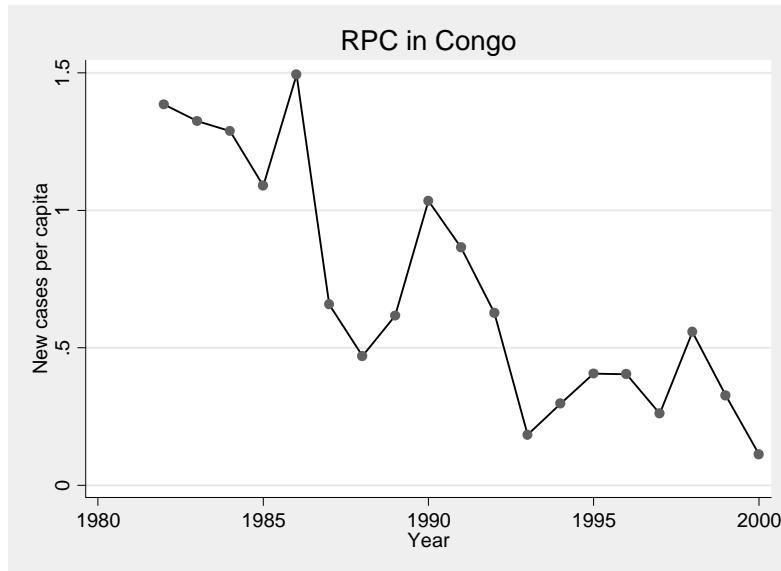


Figure IV: State Capacity in Congo

Uganda, contrary to Congo, is one of the few African countries to reduce the spread of AIDS in a rather dramatic fashion, as Figure V shows.

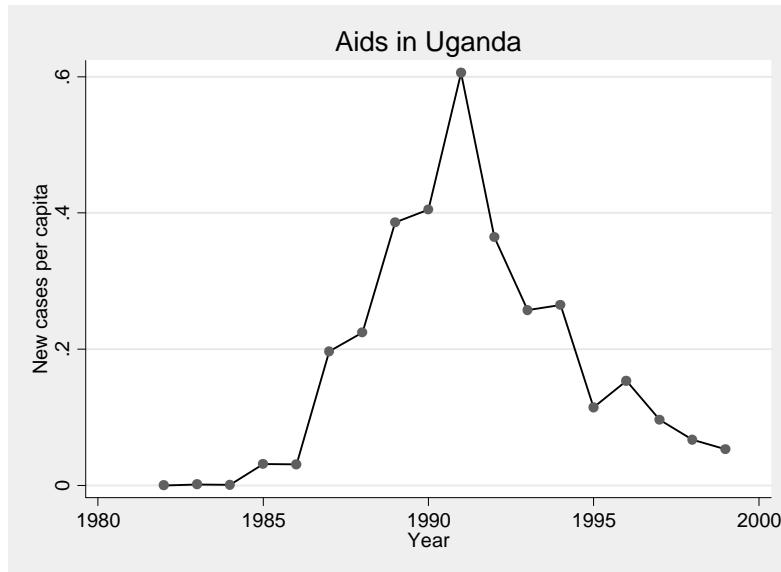


Figure V: AIDS infection rates in Uganda

Uganda has been through different regimes, the most notorious being the regime of Idi Amin and it is nominally a republic, but in reality it is classified as a (0) in Polity IV, a non democratic state. A poor country, with GDP per capita around \$350 (based on the PWT v. 6 data), it is not usually expected to

be the prime example of efficient preventive policies in the face of an epidemic. But as our empirical analysis suggests, and it is clearly depicted in Figure VI, Uganda's state capacity has been increased, while new incidents of AIDS infection have been fewer and fewer. State capacity can determine the ability of governments to enforce policies, including policies that bear political costs.

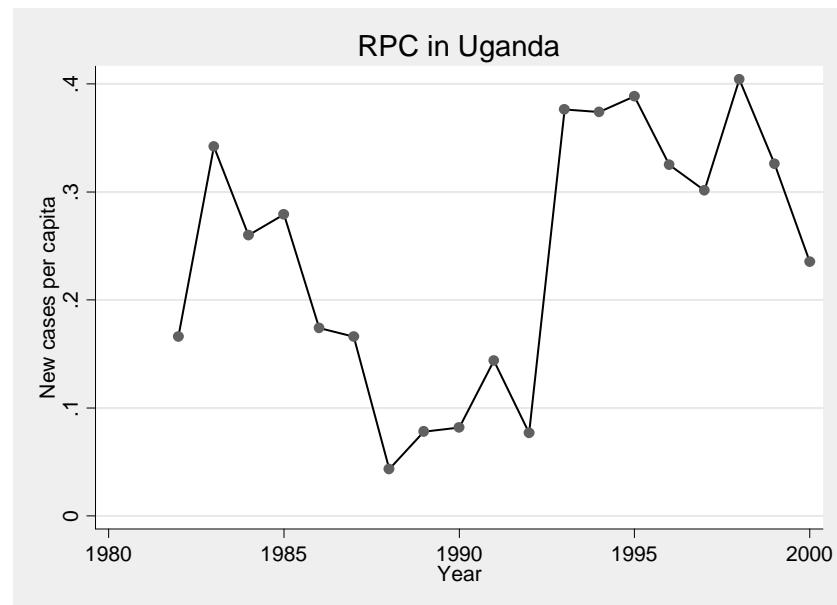


Figure VI: State capacity in Uganda

Uganda's political leadership has followed since 1993 consistent policies that involve all segments of the population and engage different social and economic partners in the fight against HIV/AIDS. As part of the programs against the spread of AIDS Uganda's government includes safe-sex education, self-treatment kit for sexually transmitted infections, and marketing of condoms. It is interesting that in this traditional society the marketing of condoms, through schools and the radio, targets young girls, ages 13-18 and men. Uganda has actively cooperated with UNAIDS to get

funding for its programs and to fund its plans to provide free anti-AIDS medication to everybody who needs it by 2005.

One policy that has been considered effective in the case of Uganda, is the use of counseling, same-day testing methods, and the build-up of small support groups. Within the support groups, people who have been infected by HIV are willing to share their personal experiences with other people. It appears that this type of interpersonal communication is the most effective way to change people's attitudes when it comes to sex.

Indeed, the results of Uganda's efforts and policies have been amazing. Even though Uganda was one of the first countries in the region to be affected by the AIDS epidemic, infection rates have dropped from 42% of the population to less than 30% in between 1992-1998. Even more important for the spread of AIDS, the infection rate among pregnant women dropped from 31% to 14% for the same time period (World Health Organization). The success of Uganda's policies can partly be attributed not only to the commitment by the governments, but also the inclusive policies that do not isolate the infected segments of the population and diffuse the blame. Hence, people have been more willing to either speak about their personal experiences with HIV/AIDS, but also to use the various facilities for testing and treatment, and change their attitudes towards sexual relationships.

5.0.: Conclusions and Policy Implications

In this paper, we have considered how a variety of domestic factors influence the flow infectious diseases across countries. In particular, we investigate the spread of HIV/AIDS epidemic, however, we do expect that our main

empirical results are applicable in other cases of communicable diseases and epidemics. We argue that states with higher state capacity tend to slow down the spread of HIV/AIDS epidemic. Moreover, we argue that democracies tend to be more responsive to the needs of the population and can be more efficient in curtailing the spread of HIV/AIDs. We empirically evaluate our hypotheses using a cross-sectional times-series sample of 117 countries. Although preliminary, our empirical results indicate that state capacity is indeed related to lower levels of HIV/AIDS infection rates. There is also strong evidence that democracy and HIV/AIDS infection rates have a reversed U-curve relationship, similar to the relationship between democracy and political violence.

As we mentioned, the data we have used for this paper is on the flow of new incidents of infected individuals, rather than the stock of infected individuals. In future research we hope to have access to more comprehensive data on both the stock and the flow of infections. Our results from the estimated models also suggest that state capacity and the spread of AIDS should be examined together in a simultaneous equations model. Finally, we acknowledge that our measurements of state capacity and democracy do not capture many of the relevant political and institutional characteristics which are relevant to promote AIDS prevention, and as such, better measures may help advance our initial steps. Finally, we acknowledge that our theory and models as stated here cannot account for cases such as the high levels of infection rates in the democratic and fairly wealthy Botswana.

In spite of these problems and shortcomings, our empirical models provide support for how some countries have been able to contain the spread of AIDS, as in the case of Uganda. The more general important lesson from this analysis is without considering political factors, we should not believe that wealth and economic development alone will shield countries from communicable diseases and epidemics.

A fruitful avenue for further research is to examine the role of women in halting the spread of AIDS, and the possible supportive role of International Organizations. Women can be critical in the fight against AIDS, as their control of reproductive rights and the use of preventive measures can safeguard both themselves and their offspring. The status of women in a society might be better predictors of the spread of AIDS than purely economic factors. Similarly, international organizations can assist and provide resources to help weaker states to face epidemics.

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