

The role of executive time horizons in state response to AIDS in Africa¹

Kim Yi Dionne²

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Abstract

In this paper I argue that politicians' time horizons affect the differing levels of state intervention against AIDS. Using data measuring government spending, AIDS policy, and political constraints, I test the presumption that the leader of a country can determine a country's level of AIDS intervention. I look at countries in east and southern Africa to explore the relationship between political institutions that constrain an executive's time horizon (i.e. competitive elections) and the level of the state's efforts in the fight against AIDS. My primary hypothesis is that an executive with a shorter time horizon is less likely to create policy or devote resources to intervene against AIDS. I find that lengthening an executive's time horizon increases the level of government spending on health, but that executives with shorter time horizons tended to have more comprehensive AIDS policy than their counterparts with longer time horizons.

Keywords: time horizons; HIV/AIDS; health; Africa; public policy

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²Department of Political Science, University of California Los Angeles, 4289 Bunche Hall, Los Angeles, CA 90095. Email: kimg@ucla.edu. Phone: 310.487.8420.

Thus it happens in matters of state; for knowing afar off (which it is only given to a prudent man to do) the evils that are brewing, they are easily cured. But when, for want of such knowledge, they are allowed to grow so that every one can recognise them, there is no longer any remedy to be found.

Machiavelli, *The Prince* (1532)

Introduction

President Yoweri Museveni's work against HIV is often hailed as a successful response to the HIV epidemic in Uganda. Conversely, former South African President Thabo Mbeki's inaction against HIV in South Africa is often chastised and sometimes blamed for the rising rates of HIV in his country. Though the two leaders are commonly referenced in the characterization of good and bad responses to AIDS, respectively, I question whether a different person faced with the same AIDS epidemic operating under the same institutional constraints on political leadership would pursue a different path.

I argue that a politician's time horizon affects the level of state intervention against AIDS. I employ a simplified rational actor framework where the central actor is the political leader of the country. My model considers a ruler's motivations given institutional constraints in predicting whether and in what amounts he will create policies and allocate state resources to intervene against AIDS. Because of the relatively long latent phase from HIV infection to AIDS disease, my central hypothesis is that an executive with a shorter time horizon is less likely to create policy or devote resources to intervene against AIDS. Essentially, I posit that the negative effects of AIDS are a long-term consequence, and any ruler who does not expect to be in power in the long term will not address the problem.

I find that executive time horizons affect level of state intervention against AIDS, but not exactly as hypothesized. Though lengthening an executive's time horizon increases the level of government spending on health, executives with shorter time horizons tended to have more comprehensive AIDS policy and planning than their counterparts. I surmise that executives who expect to be around when AIDS problems emerge will address the problem substantively, but those with short time horizons will channel spending to other efforts in order to maximize the chance of staying in office. Executives with short time horizons devote less government spending to public health than their counterparts with longer time horizons, but create more AIDS policy, an action that is cheap — whereas actually implementing policy is expensive — and that may generate some short-term benefits, mostly in the form of monetary assistance from international actors. To explore the relationship between time horizons and state HIV intervention, I look at countries in east and southern Africa, where AIDS has reached pandemic proportions.

1 A Theory of Executive Time Horizons

1.1 Time Horizons and Policy Choice

Rulers are at the head of the institutions that determine and implement state policies (Levi, 1988). As such, the ruler is central to my analysis.¹ The general question this paper asks is: why do political leaders respond differently to a similar problem? An investigation of a politician's motivations, preferences, and the system of constraints in which he operates can inform researchers as to why countries experience different policy outcomes. Politicians are motivated to pursue policies that insure first and foremost their political survival (Nordhaus, 1975; Mayhew, 1974; Levi, 1988; Geddes, 1994; Bueno de Mesquita et al., 2003; Gandhi and Przeworski, 2007). Executive time horizons are crucial to a political leader's incentive structure (Clague et al.,

1996). Political decision makers who expect to remain in power longer are less likely to take actions that incur short-run benefits at the expense of larger long term costs (Keefer, 1999).

Both democrats and autocrats face constraints on office tenure. Democratically elected leaders, at least theoretically, face a consistently timed possibility of losing office with the institution of regular elections. Nordhaus (1975) modeled a government's behavior when constrained by regular elections: choices motivated by a politician's desire to be in office may not be in concert with providing a long-term public good, as the electorate has a short memory. Even authoritarian rulers face constraints, sometimes from legislatures (Levi, 1988; North and Weingast, 1989; Wright, 2008*a*), or from the threat of revolt (Gandhi and Przeworski, 2006, 2007) and are therefore not entirely free from addressing their country's issues. Authoritarian rulers will choose either to invest in the public or insure their own situation post-rule based on their time horizons (Wright, 2008*b*).

Executives with a stronger hold on power should have a longer horizon than other executives (Beck et al., 2001). I expect that in countries with democratic elections, political leaders who won by narrow margins will be more short-sighted than political leaders winning by larger margins. Politicians with narrow victories have reason to be more preoccupied with ensuring their political survival because they have a smaller support base in the electorate. Leaders with more popular support or weak opposition have a longer horizon (Beck et al., 2001). As stated previously, authoritarian rulers, though not usually subject to the threat of electoral defeat, cannot completely ignore the needs of their citizenry — or at least the needs of those who have sufficient power to challenge their authority. In this paper, I test the idea that rulers worried of an impending ousting from power would not devote resources to a policy program lacking in short-term benefits.

1.2 Executive Time Horizons in the Time of AIDS

In this paper, I employ previous scholarship of the impact of time horizons on policy to a relatively new policy problem: the AIDS pandemic. Faced with such a devastating problem as AIDS, politicians are assumed to have preferences for swift and effective action. However, nations faced with similar HIV rates pursue different policies with varying levels of effort. A common comparison is that made between Ugandan President Museveni and former South African President Mbeki. Museveni has been a strong and vocal advocate, even during the era when AIDS was highly stigmatized, seen as a disease affecting only gay men and injection drug users. Mbeki, on the other hand, is remembered in the public for siding with AIDS dissidents in questioning whether HIV causes AIDS and for having a policy of denying anti-retroviral drugs to HIV-positive pregnant women in state hospitals.² Why would Museveni – who faces a much lower HIV prevalence in his country than Mbeki – have a much stronger response to AIDS?

Despite the fatal outcome of AIDS, cross-national survey data show that Africans fail to prioritize HIV/AIDS (Afrobarometer, 2004) and public opinion is mixed about whether to allocate resources to AIDS programs (Dionne, 2009). HIV/AIDS programs fail to be a priority even among those most affected by AIDS in Africa: be they respondents in the cross-national Afrobarometer survey who have lost a close friend or relative to AIDS, or HIV-positive respondents in rural Malawi (Dionne 2009; Dionne, Gerland and Watkins, 2009). Barnett and Whiteside (2002, p. 336) use the extreme case of Mozambique to illustrate the context in which politicians must order their policy preferences, even when faced with a generalized AIDS epidemic:

Mozambique has a GNP per capita of only USD230 per year. Only 40% of children are in primary school and 22% in secondary schooling. Less than one-third of the population has access to clean water, and 37% live on less than USD1 per day. Health spending is a modest 2.1% of GDP, and has to cover all diseases: TB, malaria and

annual cholera outbreaks, as well as HIV/AIDS. The country experienced years of civil wars, and in 2000 and 2001 devastating and widespread floods covered large areas and destroyed infrastructure. In this setting it is hard to prioritise AIDS, which is after all not yet visible.

Given weak public demand for resource allocation to AIDS programs and the constant competition with other public demands, why are any political leaders in sub-Saharan Africa expected to intervene against AIDS? The negative effects of AIDS on a country cannot be overstated. Economists and demographers have shown how HIV negatively impacts a country's labor force and impedes economic development.³ The political dilemma with HIV is its latent infection period. In the provision of resources for HIV, costs are incurred in the short term but the benefits are uncertain and if existent will only be seen in the long term. Unlike diseases that cause the infected to fall ill shortly after infection (i.e. Ebola, SARS, Avian Flu), illness associated with HIV takes considerably longer to manifest: people infected with HIV can be asymptomatic for 8-9 years and, in rural Africa, can live with HIV for an average of 10 years without anti-retroviral medication (Morgan et al., 2002). If a political leader fails to intervene, however, HIV could devastate a nation's population, economy, and, some scholars argue, state capacity (Price-Smith, 2002; Ostergard, 2002; de Waal, 2003). Even rulers not personally affected by the disease would be motivated to pursue policy in an effort to avoid the negative long-term effects of AIDS on a country. Furthermore, from a budgetary perspective, it is far less costly to prevent HIV infection than to treat people with AIDS (World Bank, 1997), making early intervention more attractive to those who expect to witness in office the long-term impact of AIDS.

Responding to AIDS requires proactive political leaders who recognize the possible risk of not addressing the AIDS epidemic and who are willing to invest resources in HIV and AIDS intervention programs. Even if a politician were to make radical changes that impacted the course of the epidemic, it would take time for the change to work its way through the population to the

point that anyone would see the results. Essentially, a leader must pay for HIV programs upfront, assume the risk of having little if any return on that investment, all while the general population makes little expressed demand for AIDS policy. Rather, the public is demanding other goods and services, and given budget constraints, when a leader spends public money on AIDS programs and policies, he effectively reduces the amount he can spend on other goods and services demanded by his constituents.

I argue that politicians constrained by a short time horizon will seek policies focused on short-term outcomes. For example, in democracies with an upcoming competitive election, I would expect the executive to create policies that distribute short-term benefits to the electorate in order to get re-elected. Similarly, an authoritarian ruler worried about an impending removal from office would also institute policies aimed at maintaining office. Such situations would work against dealing effectively with problems like AIDS that require a longer-term commitment. Hence, I expect short executive time horizons to have a negative impact on the level of state AIDS intervention. Thus, the central hypothesis to be tested in this paper is:

Executives with shorter time horizons will intervene less against HIV and AIDS than executives with longer time horizons.

What incentivizes rulers to commit resources to aggressively fight against AIDS? The answer is the same, and yet different, for democracies and autocracies: rulers are motivated based on their time horizons. A democratically elected political leader can estimate his time horizon based on the level of political support/opposition in his country, measured by margin of victory in the most recent election; plainly, leaders winning the most recent election by larger margins are expected to have a longer time horizon.⁴ It is more difficult for autocrats, on the other hand, to utilize election returns to inform the calculation of their time horizon. Rather, to estimate one's

time horizon, an autocrat will consider the strength of the regime against the strength of any opposition. To investigate whether time horizons affect state AIDS intervention, I propose to specifically test the following two hypotheses:

H1: Democratically elected executives with narrow margins of victory in the most recent election will intervene less against AIDS compared to elected executives with larger margins of victory in the previous election.

H2: Authoritarian executives who have a high probability of being ousted from office in the near term will intervene less against AIDS compared to authoritarian executives with a low probability of being ousted.

2 Context, Data and Methods

2.1 Context: East and Southern Africa

Although only 10% of the world's population lives in sub-Saharan Africa, it is home to 68% of the people living with HIV and AIDS (UNAIDS, 2008). Limiting the scope of research to countries in east and southern Africa, the proportions of a population infected with HIV in 2003 vary from 3.9% in Angola to 37.3% in Botswana (UNAIDS, 2004). Using a score from the AIDS Program Effort Index (API) as a measure of state efforts in HIV policy and planning, there is evidence that the levels of national intervention also vary (USAID et al., 2003). The API's *policy and planning score* is highest for countries with more comprehensive strategic plans to combat HIV and lower for countries with less comprehensive plans or which lack policies/plans altogether. Table 1 lists all of the countries included in the analysis, accompanied by the corresponding national HIV prevalence in 2003 and API AIDS policy and planning scores from 2003.

[table 1 here]

The scope of this paper is limited to fifteen countries in east and southern Africa for several reasons. First, these countries are the hardest hit with HIV; each is considered to have a generalized epidemic.⁵ Given the epidemic nature of the disease and its expected outcome for the infected (death), one would expect a greater sense of urgency in these countries than in countries with a low HIV prevalence or countries lacking generalized epidemics. In choosing only countries with generalized epidemics, I aim to control for different levels of response based on different levels of disease. A country with less than one percent HIV prevalence in the population is expected to respond differently than a country with more than 30% infected.⁶ Secondly, the HIV virus in east and southern Africa is the same virus type. Rather than complicate my model with the different nuances of how different types of HIV affect a population, I chose countries hard hit with HIV-1, not HIV-2.⁷ Finally, by selecting only countries in east and southern Africa, I also control for timing of the epidemic, eliminating the problem of whether one country and its leader(s), exposed to the disease for a longer time period, would have come up the learning curve before other countries/leaders and asserted a stronger plan to fight HIV.⁸ Though the analysis presented here is limited to east and southern Africa, there is still variation in the causal variables I plan to test, namely the political context and the institutions shaping an executive's time horizon. I now turn to the political institutional constraints leaders face when addressing the AIDS epidemic.

2.2 Measurements⁹

Dependent variable: Level of AIDS intervention

The outcome my research is concerned with is level of AIDS intervention.¹⁰ To estimate a country's level of intervention, I use three different measures. The first is the *policy and planning*

score from the AIDS Program Effort Index (API) in 2003. The API is a joint project of the US Agency for International Development (USAID), POLICY Project, World Health Organization (WHO), and UNAIDS. The API is significant to this study because few other indices exist that measure political variables in the context of HIV/AIDS.¹¹ The API *policy and planning score* measures whether a country has a favorable national policy on HIV/AIDS and the existence of a strategic plan and whether the national policy/plan meets stipulated criteria. The scores are on a scale of 0 to 100 and are based on elite survey responses. Higher scores indicate countries have more comprehensive AIDS policy and planning.

The second measure of intervention is the percent of the government budget allocated to expenditures on health in 2002, as reported in the World Health Organization's *2005 World Health Report*. This measure is imperfect in specifically measuring HIV intervention because it also includes general health expenditures such as hospitals and doctors, and even specific expenditures for TB and malaria. Another limitation of the government health expenditures data is that it likely excludes spending on mitigation efforts, such as aid to orphans whose parents died of AIDS. However, increased spending on public health services is significantly associated with lower HIV prevalence (Drain et al., 2004) and government spending on health ably tests the hypothesis that an executive with a long time horizon is more willing to invest in the public's health.

A third measure of intervention is the per capita domestic expenditure on HIV/AIDS programs, taken as a running average from 2002-2005, based on data reported in the *2006 Report on the Global AIDS Epidemic* and the *2008 Report on the Global AIDS Epidemic* (UNAIDS, 2006, 2008).¹² Domestic spending on HIV/AIDS more directly tests a government's willingness to devote resources to the problem, without integrating efforts of donors or health spending on

diseases other than AIDS.¹³ The measure of domestic AIDS spending is log-transformed to normalize the distribution of observations.

Control variables: Supply and demand

There are two main controls used in my estimation of the influences on AIDS intervention: measuring the supply of and demand for intervention. First, how well-equipped is a country to supply AIDS intervention, and second, is there a demand for state AIDS intervention? I use GDP per capita to control for a country's capacity to implement policy; simply put, richer nations have more resources at hand than poorer countries to implement policy. GDP per capita data is from 2001, log transformed to normalize the distribution of the data. To measure demand for AIDS intervention, I use HIV prevalence data from 2001.¹⁴ Higher prevalence has been shown to have an effect on policy when tested cross-nationally (Lieberman, 2007). However, analysis of individual-level data by Dionne (2009) and Dionne, Gerland and Watkins (2009) provide evidence contrary to the assumption that higher HIV prevalence would lead to higher demand for HIV/AIDS services. For lack of a more accurate and extensive measure and because the analysis here is cross-national, I employ HIV prevalence as a control variable estimating public demand for state AIDS intervention.¹⁵

Explanatory variables: Time horizons in authoritarian and democratic regimes

The measure of executive time horizon is dependent on regime type: in authoritarian regimes, I use the probability of regime failure and in democracies I use margin of electoral victory.¹⁶ To approximate executive time horizons in authoritarian countries, I use data from Geddes (1999) and updated by Wright (2008a) that estimates a probability for failure of regime, which is the predicted value of a duration model.¹⁷ I assume leaders with a lower probability of regime failure

will have longer time horizons and I recode the probability of regime failure variable such that low values of probability of failure are high values of authoritarian executive time horizon, and conversely, high values of probability of regime failure translate into shorter expected time horizons.

To measure the expected time horizon of leaders in the remaining, more democratic countries, I use the margin of victory won by the executive against his leading opposition candidate in the most recent election prior to 2001. Leaders with a larger margin of victory are assumed to have longer time horizons, whereas leaders with a narrow electoral victory will be more concerned with the short-term demands of the electorate as they seek to remain in power. Long-term problems like AIDS are expected to rank as lower priority to leaders who will soon be faced with a competitive election. Both time horizons measures are scaled from 0 to 1. Higher values on the measures of executive time horizons indicate longer time horizons. Summary statistics for all variables used in the analysis are provided in Table 2.

[table 2 here]

2.3 Methods

I use ordinary least squares (OLS) regression to estimate the influence of the factors I believe are important to HIV intervention. I run separate regressions on the two different dependent variables (the API *policy and planning score* and government health expenditures), starting with a control model and then adding explanatory variables. A major issue with the regression analysis is the limitations of the data with respect to the separation of the countries based on process of executive selection (authoritarian regimes have values only on the authoritarian time horizon measure, whereas democratic regimes have values only for the democratic time horizon measure). Rather than split the analysis based on executive selection, all countries without an

observation for authoritarian time horizon were coded “0” on authoritarian time horizon. Likewise, those countries with an observation for authoritarian time horizon were coded “0” on democratic time horizon. I created a dummy variable, to estimate the mean shifts between these two groups of countries. The authoritarian dummy variable is coded “1” for those countries with data for authoritarian time horizon and coded “0” for those countries with data for democratic time horizon.

Table 3 reports regression estimates of the *API policy and planning score*, government health expenditures, and government spending on AIDS. For each dependent variable, the first model (1) is an estimate of the impact of the two control variables: log HIV prevalence and log GDP per capita. Model (2) adds the executive time horizon measures (to test Hypotheses 1 and 2).

[table 3 here]

3 Analysis

3.1 Effects of Supply and Demand (Control Variables)

The effect of “supply” on state AIDS intervention is unproven. The lack of statistical significance in all but one model tested here shows that logged GDP per capita has no apparent effect on level of HIV intervention. Countries with higher GDP per capita were expected to have more resources to devote to HIV intervention, however, given the lack of statistical significance it is difficult to determine whether GDP per capita has a positive or negative effect on AIDS intervention.

The log of HIV prevalence achieves statistical significance in only one of the models tested. All models demonstrate a positive relationship between demand for HIV intervention and level of HIV intervention. For example, increasing logged prevalence of HIV by one standard deviation would increase an *API policy and planning score* by 6.8 points (roughly two-thirds of a standard

deviation). Though the logic of the “supply and demand” argument seemed straightforward, the real effect either GDP per capita or HIV prevalence has on HIV intervention is not strongly supported by the analysis here.

3.2 Effects of Executive Time Horizons

Figures 1-6 are partial regression plots of the two measures of executive time horizons. The plots against the *API policy and planning score* (Figures 1 and 2) challenge my hypothesis that shorter executive time horizons would lead to less AIDS intervention. Rather, both democratic and authoritarian executives with shorter time horizons seemed to do better than their counterparts with longer time horizons: countries with short time horizons scored higher on the *API policy and planning score*. The multivariate regression estimates also demonstrated the opposite effect on the *API policy and planning score* than hypothesized. The plots against government health spending (Figures 3 and 4), however, lend evidence that longer executive time horizons lead to more intervention. Even less enlightening are Figures 5 and 6, which fail to either support or reject the hypothesis that longer executive time horizons leads to more AIDS intervention.

[figures 1-6 here]

The small sample size inhibits a definitive conclusion on the importance of executive time horizons for state AIDS intervention. The executive time horizon measure based on margin of electoral victory, in particular, fails to achieve statistical significance in both models used in regressions against government expenditures. The lack of statistical significance could be attributed to small sample size, but could also mean the time horizon of democratic executives has no effect on health spending. The effects of the time horizon of democratic executives on the *API policy and planning score* are opposite of the expected (positive) sign: the regressions

estimate the shorter a democratic executive's horizon based on margin of electoral victory, the higher API *policy and planning score* his country will achieve. For example, increasing the time horizon of democratic executives by one standard deviation (0.24) would decrease an API *policy and planning score* by 11 points (more than one standard deviation). The effects of executive time horizon based on margin of electoral victory on government health expenditures demonstrate the predicted (positive) relationship: increasing the time horizon of democratic executives leads to increasing government expenditures on health. For example, increasing the time horizon of democratic executives by one standard deviation (0.24) increases government expenditure on health by 3.16 percentage points.

The measure of authoritarian executive time horizons was more robust in the regressions. As predicted, it has a positive relationship with government health expenditures; increasing an authoritarian's time horizon by one standard deviation (0.05) increases the amount a government spends on health by 3.2 percentage points. This finding confirms Hypothesis 2 that executives with longer time horizons based on lower probability of regime failure will likely spend more on health. Like the time horizon measure based on margin of electoral victory, however, the regressions of the time horizon measure based on probability of authoritarian regime failure against the API *policy and planning score* were also the opposite of the predicted (positive) sign. Though I expected increasing an authoritarian's time horizon would increase the likelihood that a government would create policy for AIDS intervention, the evidence shows the opposite.

The effects of executive time horizons on level of AIDS intervention behaved differently based on the outcome measure. As expected, increasing an executive's time horizon increased the level of government expenditures on health. Essentially, executives not expecting to be in office for very long would spend less government money on health. In the case of policymaking,

however, the opposite is seen in the data. Executives with short time horizons had more comprehensive AIDS policy and planning than did their counterparts with longer time horizons. While unexpected, the dichotomy between the effects on these two different measures is reasonable. It is cheaper and easier to make policy than it is to actually implement the reform dictated by the policy. Executives with short time horizons looking for a cheap, quick fix can create national AIDS commissions and craft AIDS policy in an effort to gain more support at home and internationally. However, actually spending government money to implement those policies would only happen in those countries where the executive has a longer time horizon. Most disappointing is the inability to infer any effect executive time horizons have on domestic AIDS spending: the coefficient estimates for executive time horizons, though positive, have very large standard errors and thus fail to achieve statistical significance.

4 Discussion and Conclusion

Most scholarly work on HIV and AIDS focuses on the effects of epidemiological, economic or cultural factors on HIV prevalence; only recently have scholars begun to study political responses to the AIDS pandemic (Lieberman, 2009, 2007; Gauri and Lieberman, 2006; Patterson, 2005, 2006; Bor, 2007). The effect of political leaders' efforts on HIV rates is still unproven, yet the study of state response to AIDS is relevant to international donors seeking compatible local governments for implementing HIV/AIDS interventions: although international donors have incredible resources with which to tackle the AIDS epidemic, they still require the access provided by local political leaders. Beyond policy implications, the study uncovers yet another useful application of the case study of AIDS policy in studying theories of political business cycles and executive time horizons. The paper has developed a theory of the importance of executive time horizons in the study of AIDS interventions. As such, it contributes to the general

study of HIV/AIDS by utilizing a political framework. Similarly, the paper contributes to the political science literature in that it explores the context of a time-dependent public health problem in analyzing how constraints on the executive affect policy outcomes.

The analysis presented here is limited by a small sample, and though suggestive that time horizons impact AIDS policy, the findings are inconsistent. Additional analyses (not shown) of rival arguments in the political science literature on policy making (i.e., veto players, level of democracy, leaders' ideological preferences, etc.) demonstrate weak relevance and explanatory power of rival arguments for the particular case of state AIDS intervention in Africa. Data missingness in resource-poor countries generally constrains analyses testing multiple hypotheses, however, as more data becomes available over time, perhaps a longitudinal study with more observations would offer a better comprehensive test of the hypotheses derived from a theory of executive time horizons.

The most interesting finding of the analysis is the dichotomy between policy and implementation. Though executives with shorter time horizons tend to spend less on health, those same executives tend to have a more comprehensive AIDS policy. Future research should explore how these different measures actually affect HIV incidence. If donors use the *API policy and planning score* to determine which countries will receive aid, it will be important to see if policy even has an effect on HIV rates. Should a comprehensive national AIDS policy have little effect on HIV rates in a given country, any preoccupation donors have with AIDS policy would be unwarranted. A further exploration of what affects HIV rates that considers political constraints can inform donors on how best to target aid for HIV programs.

Future research could examine more closely what role, if any, term lengths and term limits may play in executive time horizons as well as explore the role of parties in calculating time

horizons. Another possible direction of research relevant to the theory of time horizons in this paper is the study of the two major areas of AIDS intervention: HIV prevention and AIDS treatment. The analysis presented here is limited to a conflation of both treatment and prevention programs. Differentiating between these two categories of programming is important because policymakers would be expected to have varying preferences on each based on their time horizons. Do executives with short time horizons promote resource allocation to palliative care of AIDS patients because the results of AIDS treatment intervention (usually anti-retroviral medication) are most tangible and therefore most likely to win immediate support from a subset of the population? Along a similar line of thinking, would only those executives with long time horizons allocate resources to preventive HIV intervention, because they would actually experience the outcomes of that intervention?

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Table 1: Countries of Analysis

Country	HIV prevalence (2003)	AIDS policy and planning score (2003)
Angola	3.9	72
Botswana	37.3	100
Burundi	6	88
Ethiopia	4.4	68
Kenya	6.7	90
Lesotho	28.9	73
Malawi	14.2	93
Mozambique	12.2	74
Namibia	21.3	73
Rwanda	5.1	93
South Africa	21.5	69
Tanzania	8.8	83
Uganda	4.1	83
Zambia	16.5	78
Zimbabwe	24.6	79

Source: UNAIDS (2004) and USAID et al. (2003)

Table 2: Summary Statistics of Variables Contained in the Statistical Analysis

Variable	N	mean	sd	min	median	max
API AIDS policy and planning score 2003	15	81.07	9.9	68	79	100
Government health expenditures 2002	15	10.31	4.33	2	10.7	19.9
Domestic spending on AIDS per capita (log)	14	-13.3	1.65	-15.24	-13.93	-9.18
Ability to supply intervention: GDP per capita 2001 (log)	15	3.2	0.41	2.74	3.07	3.99
Demand for intervention: HIV prevalence 2001 (log)	15	1.06	0.33	0.6	1.1	1.6
Democratic Executive Time Horizon	6	0.35	0.24	0.07	0.34	0.66
Authoritarian Executive Time Horizon	9	0.93	0.05	0.85	0.94	0.98
Authoritarian Dummy	15	0.6	0.51	0	1	1

Table 3: Estimated Effects of Time Horizons on State AIDS Intervention

	API Policy		Health Spending		AIDS Spending	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Constant	96.97*** (21.75)	49.36 (32.15)	12.22 (9.22)	13.95 (14.34)	-21.48*** (2.7)	-21.17*** (5.32)
Log HIV Prevalence	7.89 (10.03)	20.6* (9.82)	5.77 (4.25)	2.47 (4.37)	1.67 (1.28)	2.42 (1.74)
Log GDP per capita	-7.59 (8.04)	6.06 (10.48)	-2.51 (3.41)	-3.5 (4.68)	1.97* (0.97)	1.57 (1.68)
Dem. Time Horizon		-47.49* (23.03)		13.16 (10.27)		0.66 (3.77)
Auth. Time Horizon		-172.79** (74.06)		62.11* (33.02)		11.61 (12.52)
Auth. Dummy		-17.48* (8.75)		9.68** (3.9)		10.87 (11.69)
Observations	15	15	15	15	14	14
R-squared	0.08	0.51	0.13	0.5	0.52	0.58

Standard errors in parentheses. Significance levels: * significant at 10%; ** significant at 5%; *** significant at 1%.

Table summary: Contrary to what I hypothesized, longer time horizons are associated with lower values on the API policy and planning score, meaning less AIDS intervention (API Policy). As predicted, longer time horizons are associated with higher government expenditures on health (Health Spending). However, no inferences can be made with this data about the role of executive time horizons on domestic spending for AIDS programs (AIDS Spending).

Figure 1: Partial Regression Plot of Democratic Time Horizon & Policy

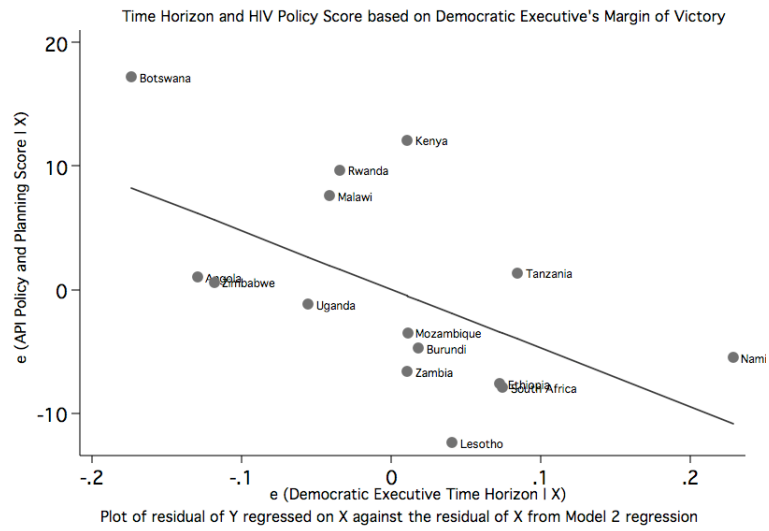


Figure 2: Partial Regression Plot of Authoritarian Time Horizon & Policy

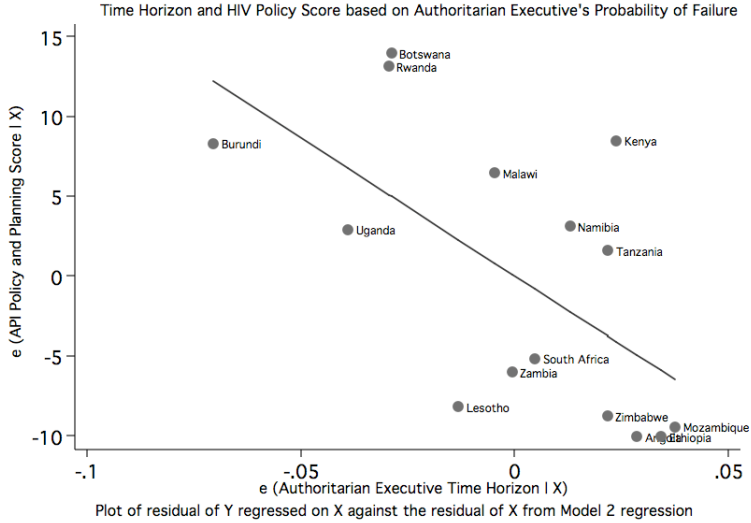


Figure 3: Partial Regression Plot of Democratic Time Horizon & Health Spending

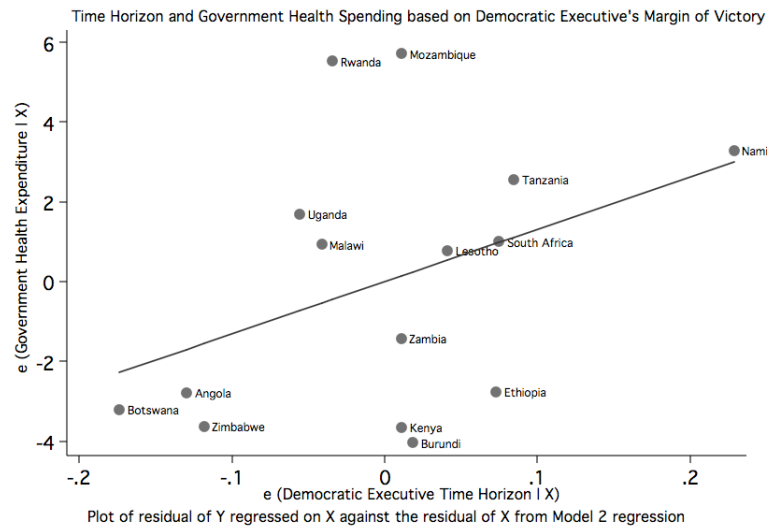


Figure 4: Partial Regression Plot of Authoritarian Time Horizon & Health Spending

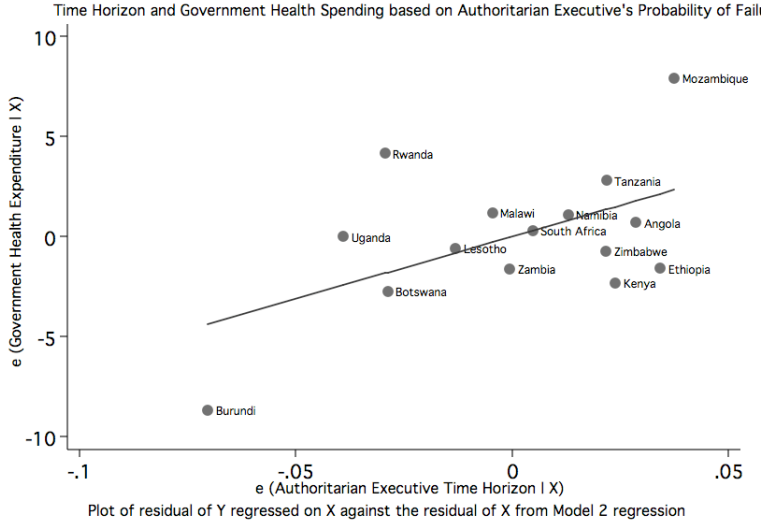


Figure 5: Partial Regression Plot of Democratic Time Horizon & AIDS Spending

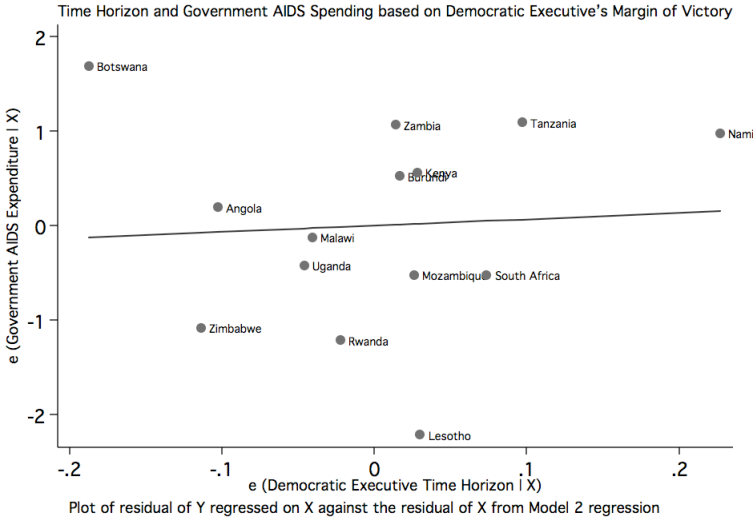
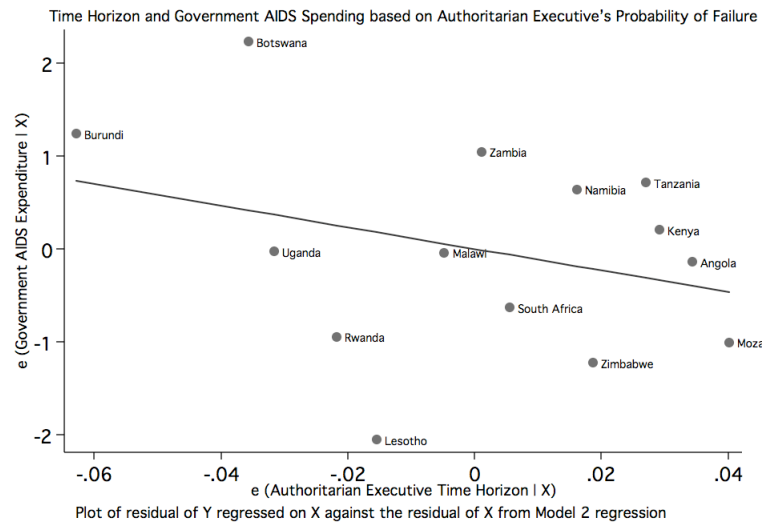


Figure 6: Partial Regression Plot of Authoritarian Time Horizon & AIDS Spending



¹ Certainly, no ruler makes decisions in a vacuum. In the case explored here — the AIDS pandemic in Africa — international actors and civil society have played an important role. For the purposes of this paper, however, I focus on a critical decision-maker in AIDS interventions: the ruler of a country.

² A similar though less publicized contrast can be made using the difference in response to HIV between the former presidents of Malawi and Zambia. Though Malawi and Zambia have had similar rates of infection, Malawi's former President Bakili Muluzi publicly proclaimed his brother died of AIDS and that Muluzi himself was tested for HIV, whereas Zambia's former President Levy Mwanawasa refused to be tested for HIV after a call from the Medical Association of Zambia that he undergo HIV testing to raise awareness about HIV.

³ See, for example Cheru (2000), who reviewed the case of Zambia to shed light on how HIV/AIDS has negatively impacted economic development. Demographic surveillance provides evidence of steep rises in mortality during the AIDS epidemic (UNAIDS, 2004).

⁴ Because of the small sample size, I do not analyze the impact of term lengths and limits, nor the role of parties in calculating time horizons. All but three countries in this study (Angola, Burundi, and Lesotho) had defined term lengths for executive office of either five or six years. Another possible test would be to examine whether an executive's expected time in office based on constitutional term limits affects HIV intervention. I have not employed this test here given the "newness" of constitutional term limits in the countries of analysis. Take for example, President Chiluba of Zambia in 2001. Though he was limited to two terms as president by the constitution, President Chiluba's supporters mounted a campaign to amend the constitution to allow Chiluba to serve a third term. The campaign was unsuccessful, but demonstrates the yet-acquired stability

of term limits typically seen in longer-established democracies.

⁵ Epidemics can be classified as nascent, concentrated, or generalized. Countries with a nascent epidemic have less than 5 percent of high-risk subpopulations infected. Concentrated epidemics are defined as those in which HIV prevalence in high-risk subpopulations is 5 percent or higher, but is still less than 5 percent among women attending antenatal clinics. A generalized epidemic is one in which HIV prevalence among women attending antenatal clinics is 5 percent or higher (World Bank, 1997). Classification as a generalized epidemic means the disease has moved beyond high-risk subpopulations and reached the general population.

⁶ In fact, without a generalized epidemic, one may not expect a national response in a resource-poor setting. Therefore, little data is gathered on the AIDS policies/programs of countries without generalized epidemics.

⁷ HIV-2 is biologically similar to HIV-1, but has a reduced virulence compared to HIV-1 and is geographically limited to mainly West Africa (Marlink et al., 1994). The difference in virulence of the two types of HIV leads to a different infection rate which leads to a different prevalence rate, and it would be expected, a different kind/level of response from the government.

⁸ The HIV epidemic began within a six-year period in the countries studied here. The country with the earliest report of HIV or AIDS was Kenya in 1980 and the most recent were Lesotho, Mozambique and Namibia in 1986.

⁹ The dataset, replication files, and additional analyses not shown here are available at:

<http://king.bol.ucla.edu>.

¹⁰ AIDS intervention as analyzed here conflates state efforts to prevent the spread of HIV with efforts to alleviate the impacts of AIDS. A more precise analysis of the role of executive time horizons would separate these efforts as the time horizons for the two agendas differ.

¹¹ The API measures national program effort in response to the HIV/AIDS epidemics in 54 countries. Because this paper is specifically concerned with the response of the state, separate from the efforts made by international NGOs and civil society, I employ a variable measuring only efforts of the state: the *API policy and planning score*. There are nine additional variables in the API, each constructed on a scale of 0 to 100 based on elite survey responses. Respondents were asked “yes/no” questions about the existence of policies and a number of characteristics of the policy; these are compiled for the “quantitative item score.” The quantitative item score is the proportion of “yes/no” questions answered either “yes” or “no” depending on the component. Because “yes/no” responses cannot capture all elements of program effort, respondents are asked to provide a summary rating for each component; these scores are averaged to compute the “qualitative summary score.” The final score for each component is the average of the qualitative summary score and the quantitative item score. Though an imprecise measure of AIDS intervention, the API is the best publicly available cross-national data on response to AIDS and is employed by other scholars of AIDS and politics (Lieberman, 2007; Patterson, 2006; Bor, 2007).

¹² Data was not reported by Ethiopia, reducing the number of cases to only 14 when using the AIDS spending measure.

¹³ I do not employ the alternative measure of percentage of AIDS budget from external and domestic sources for two reasons: first, I am concerned donor idiosyncracies in aid allocation would muddle an analysis of domestic policy response; second, such data is only available since 2005, following the introduction of PEPFAR, where we see domestic response to AIDS overpowered by the global intervention.

¹⁴ HIV prevalence data was also log-transformed to normalize the observations.

¹⁵ Though Afrobarometer data measures demand for AIDS services, such data is only available

for a subset of the countries in the analysis here.

¹⁶ Categorization by regime type relied on data from Geddes (1999): all countries with an estimated probability of failure in the authoritarian regime dataset for 2000 were classified as autocratic. The remaining countries were classified democratic.

¹⁷ Using this measure, I assume leaders in authoritarian regimes determine their time horizon by calculating their probability of maintaining power. The data is time-variant. To best match the measures used for executive time horizons in democratic regimes (all election data is from the 1990s), I used data from 2000. For a more detailed presentation of the probability of regime failure data, see Wright (2008*b*, p. 980).