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**MASTERS HALF DISSERTATION IN PARTIAL FULFILLMENT OF THE
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THE IMPACT OF POLITICAL INSTITUTIONS AND STATE CAPACITY ON ANTIRETROVIRAL DRUG COVERAGE: A CROSS COUNTRY ANALYSIS OF DETERMINANTS

ABSTRACT

Using a cross-sectional regression model, we answer two questions related to the determinants of highly active antiretroviral treatment (HAART) coverage across 108 countries using 2006 and 2009 HAART data. The first asks how political institutions function to enable better HAART coverage outcomes; and the second asks whether countries with higher levels of state capacity tend to have higher levels of HAART coverage. We find weak statistical evidence that both democracies and authoritarian countries can achieve high levels of HAART coverage; cultural fractionalization has less of an effect on coverage than we expected; and centralized governments achieve higher treatment coverage outcomes. The effect of political institutions is muted when we control for state capacity and funding. We apply two broad measures of state capacity, namely tax revenue as a share of GDP and our own state capacity index developed using Principal Component Factor Analysis. We find evidence that high levels of state capacity are positively related to HAART coverage outcomes.

TABLE OF CONTENTS

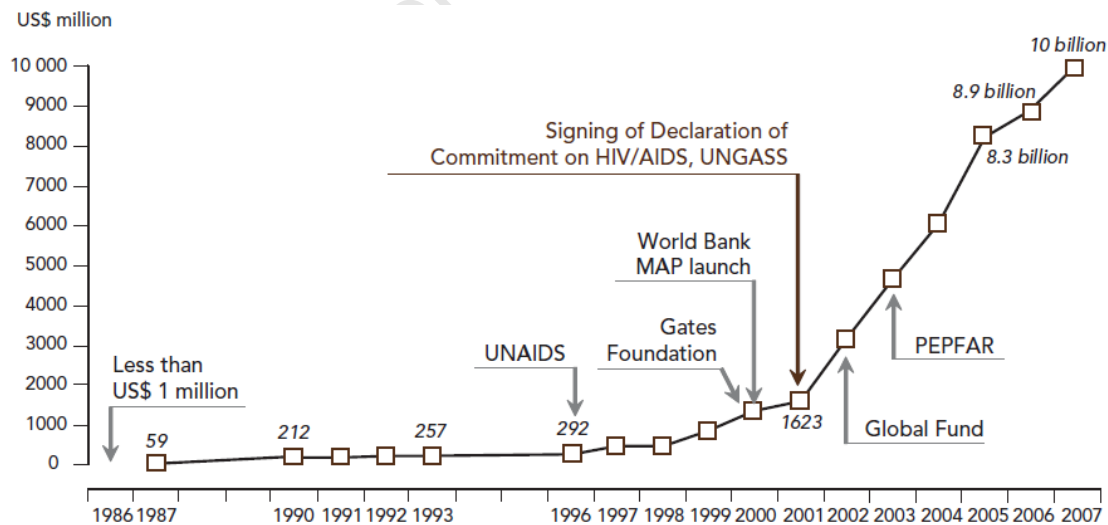
Chapter and section	Page number
1. Introduction	3
1.1. Research questions and hypotheses	4
1.2. Rationale and purpose of the study	7
2. Literature Review	11
2.1. Empirical studies on the determinants of HAART coverage	11
2.2. Discussion of political factors	12
2.3. Discussion of capacity factors	17
2.4. Other relevant literature	19
2.5. Contributions to the literature on HAART coverage	22
3. Political Systems and HAART coverage	24
3.1. Political regimes and their impact on HAART coverage	24
3.1.1. Potential shortfalls of democracy in providing HAART	28
3.1.2. HAART coverage in authoritarian regimes	30
3.2. Cultural fractionalization and its impact on HAART coverage	33
3.3. Government centralization and its impact on HAART coverage	34
4. State Capacity and HAART coverage	38
4.1. HAART and measuring state capacity	39
4.1.1. Tax revenue as a share of GDP	40
4.1.2. State Capacity Index	41
5. Empirical Model and Methodology	49
5.1. Independent variables	49
5.1.1. Epidemiological	49
5.1.2. Financial and economic	50
5.1.3. Political system factors	51
5.1.4. Indicators of state capacity	53
6. Results and Discussion	55
7. Conclusion	65
8. References	68

1. INTRODUCTION

Over the last decade, the challenge for HIV/AIDS policy-makers, practitioners and international organisations has been to find ways to make the universal provision of Highly Active Antiretroviral Treatment (HAART) a financially feasible component of the strategy for combating the epidemic. Indeed, we have seen a significant increase in the funding made available for HIV/AIDS prevention and treatment, and a large proportion of this funding has been channeled towards increased treatment provision. In combination with the increased pool of resources, we have seen a decline in the cost of brand-name ARV drugs and an upsurge in the availability of cheaper generic drug regimens particularly in low-resource countries. These crucial developments resulted in a dramatic acceleration in HAART coverage across countries. In low- and middle-income countries alone there was a 10-fold increase in access to treatment between 2003 and 2008 according to the UNAIDS and WHO 2009 AIDS Epidemic Update (UNAIDS, 2009:16). As of December 2009, the estimated number of people receiving HAART in these low and middle-income countries was 5.2 million, from below 400 000 in 2002 (UNAIDS, 2010:7).

It is commonly accepted that funding and assistance from international donors has played a pivotal role in the achievements of the last decade along with the funding commitments of domestic governments. Figure 1.1 below reflects the sharp rise in the total annual resources available for HIV/AIDS over the period from the signing of the UN Declaration of Commitment on HIV/AIDS in 2001, to 2007. The timeline also reflects the introduction of landmark international donor assistance projects over the period 1986-2007.

Figure 1.1. Total Annual Resources Available for AIDS, 1986-2007



Source: UNAIDS (2008:188)

To date, resources have been contributed through a combination of sources including domestic public expenditure, international bilateral agreements, multilateral organisations, and other international sources such as private donors (e.g. The Bill and Melinda Gates Foundation and the Clinton Foundation). This effort has been aided by the creation of global treatment coverage targets such as the WHO and UNAIDS '3-by-5' initiative and the introduction of programmes such as the US President's Emergency Plan for AIDS Relief (PEPFAR) in 2003.¹The WHO and UNAIDS '3-by-5' initiative launched in 2003 sought to provide HAART to 3 million people by the year 2005 as part of the broader goal of ensuring universal access to treatment for people living with HIV/AIDS. The strategy entailed partnering with national governments in AIDS-affected countries to ensure a reliable supply of medicines, create standardized drug delivery tools, and to share knowledge on successful drug provision practice. At the same time, bilateral aid to HIV/AIDS control and contributions to the Global Fund to fight AIDS, TB and Malaria from the OECD and high-income countries has risen considerably. UNAIDS and WHO have most recently introduced *Treatment 2.0* which is a global programme designed to simplify the way HIV treatment is currently provided and to scale up access by reducing treatment costs, making treatment regimens simpler, reducing the burden on health systems, and improving the quality of life of people living with HIV (UNAIDS, 2010:106).

However, in May 2010 Médecins Sans Frontières (MSF) published that they had increasing concerns about backtracking in donor commitment towards HIV/AIDS intervention programmes. They argue that international donors have diluted their initial 'emergency' commitment and shifted funding toward a wider range of health issues despite the proven benefits of HIV/AIDS intervention on healthcare systems overall (MSF, 2010). Nattrass and Gonsalves (2009) wrote extensively on this phenomenon in which proponents of this redirection of funds argue that the 'AIDS lobby' has garnered an unfair amount of resources to the extent that overall health systems have been undermined and funds had consequently been wasted and misdirected. The authors add that the funding backlash has been exacerbated by the recent global economic crisis which has reduced the resources available for foreign aid. Without debating the veracity of the arguments put forward by proponents of the funding backlash, it is simply worth noting that the current climate demands that domestic governments in low and middle-income countries, which have to this point relied heavily on donor funding, play an increased role in ensuring that HIV/AIDS intervention programmes are sustained. Importantly, ensuring that the increasing trend in the provision of HAART is sustained will rely on the ability of domestic governments to increase public funding towards treatment and continue investments in the healthcare systems, infrastructure, and institutions to deliver treatment and care.

1.1. Research questions and hypotheses

This paper presents an analysis of the determinants of HAART coverage across countries. HAART coverage refers to the number of people estimated to be receiving antiretroviral treatment as a share of

¹ Details of the '3-by-5' initiative are available online at: <http://www.who.int/3by5/en/>

the projected number of people who need treatment. We categorize these determinants along two main dimensions, namely: a domestic political institution dimension; and a state capacity dimension. We review previous approaches used to account for the role of domestic political factors in explaining the levels of HAART coverage in a country. Much of this literature has focused on the type of political regime that prevails in a country and we find that democratic systems are typically presented as the most likely to result in higher HAART coverage. However, there is less of a focus on the potential shortfalls of democratic AIDS governance and why a country like South Africa which is a democracy, has until recently performed so poorly in terms of instituting countermeasures to reverse the spread of the epidemic. Different ‘political’ variables used in this literature such as electoral accountability, press freedoms, and state legitimacy tell us precious little about how a democratic political system actually translates into higher HAART coverage outcomes and tend to read more like a set of principles or values that typify a democracy. We do not look at these variables. If we are to accept that democratic systems are more likely to result in higher HAART outcomes, we need to understand *how* this takes place and why authoritarian political systems would not achieve the same outcomes?

Our focus in this paper will be on more pragmatic aspects of governance: decision-making and implementation. We argue that providing treatment from a governance perspective relies on domestic governments making critical decisions on issues such as whether to rollout treatment, what are the realistic targets for the short- to long-term, what is the appropriate strategy to achieve our goals, what financial, human and infrastructural resources are available to us, and what is the best programme of action for implementation? We believe that in recent years as HAART has become a more feasible and critical part of global intervention strategies, studies of treatment coverage can shift away from trying to find abstract measures of ‘political will and commitment’, and move towards pragmatic analyses of the factors that impact directly on the decisions that governments make about expanding treatment access, and the factors that impact directly on how those decisions can be implemented? In our view, governments can really show their commitment by making progressive political decisions to increase treatment coverage over time (based on feasible targets) and allocating sufficient resources to meeting those targets. This will be the focus of our research questions and subsequent analysis.

We present the following set of (political) institutional variables: political regime, cultural fractionalization, and government centralization. We argue later that these variables impact directly on government decision-making processes. The first research question we seek to answer is:

Q.1. How do political institutions work to enable better HAART coverage outcomes?

An important corollary to this question is whether there is any evidence showing that highly authoritarian systems can also enable higher HAART coverage outcomes?

On this first question we expect to find that while there are examples of non-democratic countries that have achieved high HAART coverage, it is generally more likely that higher levels of HAART coverage will be achieved in democracies; high levels of politically salient or institutionalized cultural fractionalization are likely to result in lower levels of HAART coverage; centralized governance institutions are most likely to result in higher levels of HAART coverage in resource-constrained countries.

We then define state capacity broadly as the ability of government to implement policy. Previous studies of the determinants of HAART coverage have sought to account for specific aspects of healthcare sector capacity that influence the level of HAART coverage in a country. As we will describe in the literature section, these often include standard measures of human resource capacity in the health sector, as well as perceptions of government effectiveness. In this paper, we will broaden the existing understanding of state capacity and measures thereof. We take the view that providing HAART is a highly resource-intensive process that encompasses not only funding, but the infrastructural, institutional, and human resource capacity to ensure effectiveness as well. We draw from state capacity literature and introduce two broader measures of state capacity as possible determinants of HAART coverage, namely: tax revenue as a share of GDP, and our own State Capacity Index (SCI). This exploratory analysis seeks to answer the second research question of this paper:

Q.2. Do countries with higher levels of state capacity as measured by tax revenue as a share of GDP or an index of state capacity tend to have higher levels of HAART coverage?

On this second question we expect to find that countries with higher levels of state capacity, as measured by tax revenue as a share of GDP and an index of state capacity, generally achieve higher levels of HAART coverage.

To answer these questions, we analyze HAART coverage data from UNAIDS for 108 countries with HIV prevalence greater than 0.1% for 2006, and the most recently released data for 2009 using Ordinary Least Squares regression method. Although most of our analysis will concern the recent 2009 data, we compare these results with 2006 (cross-sectional) data as a way to compare (static comparison) how the determinants of HAART coverage might have changed since 2006, the year just after the UNAIDS and WHO '3-by-5' campaign during which there was a significant increase in global funding and thus access to treatment. We will focus on our new state capacity index and not the tax revenue variable in our cross-sectional analysis of the 2006 and 2009 HAART coverage data. Applying our index in this comparison will allow us to assess the importance of endogenous state capacity as a determinant of HAART coverage in 2006, a period just after the '3-by-5' initiative lapsed and before the funding

backlash; and 2009 which coincides with the donor funding backlash and the global financial crisis. We argue that the challenges in this recent period have placed increased focus on domestic governments to sustain treatment provision and so domestic capacity to do so is even more critical. We do not use a time series analysis because we find insufficient time-variant data up to 2009 for our political institution variables to add real value. Specifically, the cultural fractionalization indicator that we use is only available as a constant value for each country for the period of our analysis and the government centralization variable is only available for 2004 as the most recent year. A cross-sectional approach is also consistent with some of the studies reviewed in the literature section.²

1.2. Rationale and purpose of the study

A number of studies which we will look at in the literature section have focused on the provision of treatment to those who need it as a measurable outcome of national response strategies. These studies look at HAART coverage as a dependent variable which has the advantage of being an estimable, quantitative measure that can be compared across countries. Although not completely accurate, HAART coverage estimates look to capture both the public and private provision of essential treatment which gives a good indication of how a society as a whole has responded to the epidemic. In the absence of a vaccine, HAART offers an effective strategy to policy-makers for managing the disease by prolonging lives, improving the quality of life for those people who are already infected, and reducing infectiousness. This has the effect of reducing the burden on hospitals for instance, as less people reach the stage where their immune systems are fatally weakened by HIV. HAART is different from an HIV prevention strategy which focuses on reducing the number of new HIV infections. Table 1.1 below summarizes and contrasts the characteristics and priorities relating to prevention and treatment strategies according to UNAIDS.

Table 1.1. Characteristics and priorities of HIV/AIDS prevention and treatment strategies

<i>Prevention Strategies³</i>	<i>Treatment Strategies⁴</i>
Change sexual and drug-using behaviour	Increasing individual knowledge of HIV status
Promote correct and consistent use of condoms	Reduce stigma among health providers and the public
Reduce the number of sexual partners	Build human capacity to sustain treatment
Improve the management of STIs	Improve supply management to minimize delays
Broaden access to HIV testing and counseling	Integrate HIV care with other health services
Increase access to drug users harm-reduction plans	Improve patient monitoring and treatment adherence
Promote medical male circumcision	Ensuring equity of access to treatment
Effective infection control in health care settings	Using expanded treatment access to bolster prevention

² Natrass (2006), Schwardmann (2008), Natrass (2008a) each apply a cross-sectional analysis

³ UNAIDS (2008:97)

⁴ UNAIDS (2006:13)

It is clear from the table that prevention strategies are different from treatment interventions in terms of their respective priority areas which we draw from various UNAIDS reports. It is thus reasonable to expect that prevention strategies would be influenced by a different set of determinants to those for HAART. This highlights the potential challenge with analyzing studies of prevention outcomes to enhance our understanding of HAART coverage. We need to be cautious in our analysis of studies that focus on prevention interventions for the simple reason that a variable that influences a reduction in the number of new infections in a country will not necessarily result in higher HAART coverage. However, this does not preclude us from assessing studies of prevention interventions to draw insight from the empirical and statistical approaches applied that may be relevant to our analysis. A cursory glance at Table 1.1 above shows that prevention and treatment strategies are also interlinked – the prevention strategies include broadening access to HIV testing and counseling as a priority, whilst the treatment strategies include leveraging expanded access to treatment to bolster prevention efforts. The interlinked nature of some aspects of prevention and treatment strategies means that it may not always be clear which strategy resulted in which outcome e.g. HIV incidence (rate of new infections) is in part a function of the fact that treatment reduces the viral load and thus the infectiousness of HIV positive individuals; while treatment strategies for the long term may become less feasible in a resource-constrained environment if prevention strategies do not help to reduce the rate of new infections.

The research questions outlined in this paper build on the premise that providing HAART is thus a crucial component of a national intervention strategy. Understanding why countries have performed so differently in terms of expanding access to treatment is very important for designing treatment strategies for the future. HAART provides a means to control the deadly effects of the virus in the short-term – treatment reduces the morbidity of people infected with HIV and prolongs their lives substantially. In the medium- to long-term, sustaining access to these drugs will require increased resource investments as more people are able to enjoy prolonged lives due to the treatment (and will thus require continued access to treatment). This has high-level implications in terms of policy-making and resource allocation for domestic governments and external donors alike.

With reference to the first research question, we want to gain an understanding of how political system characteristics influence HAART outcomes. Each of the institutional variables we look at speaks to an interesting aspect of the political environment. Regime characteristics tell us about the set of principles and the context within which policy-making and policy implementation take place in a given country (Hyden et al, 2004:2&12). For example, democratic systems might be particularly good for encouraging social welfare and redistributive programmes however, they may not be as effective for implementing policy that requires more aggressive action by government such as tax collection. In the 1990s, Uganda which had an authoritarian regime became a poster child for the ability of countries in the developing world to successfully reverse the spread of the epidemic (See Eboko, 2005; Parkhurst & Lush, 2004). Putzel (2003) presents that in the cases of Uganda and Senegal the provision of treatment formed part of an overall intervention strategy which included behaviour change and prevention objectives. Uganda

was able to bring a full-blown epidemic under control due to the characteristics of their leader; Senegal was able to intervene to stop HIV/AIDS before it reached epidemic status.⁵Teixeira (et al, 2003) discusses the efforts of the democratic government in Brazil towards providing universal access to antiretroviral therapy. They find that Brazil's success in providing universal ARV therapy which began in the 90s was based on "a concerted early government response, a strong and effective participation of the civil society, a multisectoral mobilization, a balanced approach between prevention and treatment and a systematic advocacy for human rights in all strategies and actions" (Teixeira et al, 2003:73). Each of these well documented success stories were based on aggressive government action.

What we see is that different political systems offer their own benefits in terms of their ability to respond to the HIV/AIDS epidemic. We can apply this information to further our understanding of why democracies seem to be likely to produce higher HAART policy outcomes.

When looking at what Lieberman describes as politically salient ethnic boundaries we witness a different aspect of how political systems can influence the rollout of treatment. He finds that in countries where there are strong boundaries dividing people into substantial and recognizable ethnic groups, the epidemic is in turn understood in ethnic terms and ultimately this frame of reference becomes a political constraint on national policies to combat AIDS (Lieberman, 2009:3). By accounting for cultural fractionalization in our analysis of HAART provision we will gain insight into decision-making processes. For example, Wantchekon & Taylor (2007:3) describe a situation in which politically salient fractionalization can be both good and bad depending on the situation in that a highly fractionalized government (in a democracy) can translate into lively political competition and intra-party negotiation; whereas fractionalization can also lead to a gridlock in terms of excessive debate and delayed policy-making processes. Lieberman (2007) as we discuss in Chapter 3 argues that race and ethnic diversity are important for understanding AIDS policy outcomes. Part of his argument as described in Natrass (2009:4) is that governments are less aggressive on AIDS policy in ethnically divided countries because the disease may be concentrated among politically marginalized groups or the ruling elite may fear reputational damage by highlighting an AIDS crisis amongst their own supporters. We want to further understand these intricate relationships and their potential impact on government decision-making and the provision of HAART across countries.

Both Uganda and Senegal's strategies sought to direct resources to the district level and to decentralize the implementation of HIV/AIDS policy (Putzel, 2003:40). This was done primarily to ensure that health services reached those in need in the most remote district settings. However, these governments faced significant challenges here as they found that decentralization of health services in general was inappropriate in settings where capacity to implement was lacking. This is consistent with other views

⁵ Also see Eboko (2005:45) for a discussion on the different, yet successful approaches of Uganda and Senegal

on decentralization of public service provision in Africa where it is found that particularly in ethnically diverse societies, decentralization has resulted in heightened ethnic boundaries and failure to deliver services to the poor as ethnic differences confound political decision-making processes (Dessy, 2007). South Africa and Ghana were listed as exceptions in terms of successfully decentralizing revenue collection and accountability. Elhiraika (2007) writes that South Africa (which we note has until recently performed poorly on AIDS policy) should look to further decentralize fiscal and revenue power in order to improve service delivery in terms of education and health services. Looking at some of the literature on decentralization can help us to better understand how political systems influence HAART rollout. There are few examples of successful service delivery interventions in Africa using decentralized government systems. However, it is valuable to test whether these outcomes might be different for HAART rollout programmes that are designed to reach local communities in rural and isolated regions of a country. It may also be interesting in the context of the increased emphasis by UNAIDS and major donors on non-governmental organisations and private donors being allowed to partner with local governments to deliver treatment particularly in isolated, resource-constrained settings (UNAIDS, 2008:209).

To the extent that there is a backlash against AIDS-specific funding from the international donor community, the spotlight will increasingly be on domestic governments to sustain and improve on the recent achievements in terms of providing HAART. Indeed, UNAIDS has found that “domestic expenditure is the largest source of HIV financing globally today, accounting for 52% of resources for the HIV response in low and middle-income countries” (UNAIDS, 2010:10). They argue that improving financing for HIV intervention programmes will require ongoing efforts to mobilize domestic resources, and increase the efficient use of these resources for HIV and related health and development programmes. Assessing the endogenous capacity of domestic governments to continue providing HAART to those who need it amidst growing external funding constraints can add value to the literature on HAART coverage. We argue that while external funding is crucial, endogenous state capacity can ensure that HAART programmes and health systems in general will be more sustainable in the long-term. Our second research question therefore looks at the capacity of country governments with a focus on the ability of governments to implement HAART rollout policy.

The structure of the paper is as follows: Chapter 2 presents a review of the relevant literature and the contribution that our paper will make; Chapter 3 looks at the relationship between political systems and HAART coverage; Chapter 4 presents our discussion of the relationship between state capacity and HAART coverage; Chapter 5 will describe our empirical model and data; Chapter 6 presents our results and discussions; Chapter 7 presents the conclusions of our analysis.

2. LITERATURE REVIEW

2.1. Empirical studies on the determinants of HAART coverage

This section reviews the relevant literature on the determinants of HAART coverage across countries. We place an emphasis on aspects of previous studies that account for both political institution and capacity factors. The aim is to highlight where previous studies have failed to adequately account for factors along these two dimensions and how our analysis will add to this literature.

Table 2.1 below reflects the political and capacity variables included in previous empirical analyses on HAART coverage as well as a brief description of the logic the authors used for including them. Signs in parentheses show the direction of the effects found in regression analysis and italics are used to highlight variables that were statistically significant in each study. The reader will note that we have not included financial variables such as GDP per capita, external aid, and public health expenditure in the column for capacity variables. While these factors are an important aspect of the ability of the state to implement HAART rollout policy, we classify them separately as financial or economic variables that are different from infrastructural and human resource capacity as we will describe in Chapter 4. Importantly, each of the studies reflected in the table does control for these financial variables and here we can focus on the other methods used in the literature to capture the impact of health sector and government capacity. We discuss each of the papers reviewed in the order in which they appear in the table.

Table 2.1. Political and capacity-related variables in previous empirical studies of HAART coverage

Author (Date)	Political Variables	Capacity Variables
Nattrass (2006)	<ul style="list-style-type: none"> • WB voice & accountability – political pressure on government (+) • <i>Established democracy dummy – effect of democratic political regime (+)</i> 	<ul style="list-style-type: none"> • <i>% of births attended by skilled health professionals – reach of health sector (+/-)</i> • <i>WB government effectiveness – proxy for government capacity (+)</i>
Lieberman (2007)	<ul style="list-style-type: none"> • <i>Cultural fractionalization – effect of politically salient ethnic diversity (-)</i> • Polity IV regime-type scores – political regime score [max 10 = democracy] (-) 	<ul style="list-style-type: none"> • <i>WB government effectiveness – proxy for government capacity (+)</i>
Schwardmann (June 2008)	<ul style="list-style-type: none"> • <i>Established democracy dummy – effect of democratic political regime (+)</i> • State legitimacy – effect of colonial legacy and state formation (+) • FH political rights score - electoral accountability & incentives for leaders to intervene (-) • FH Press freedom – power of the press to expose crisis conditions (+) • WB Political stability – threat of extra-legal challenges to the state (+) • Cultural fractionalization – effect of politically salient ethnic diversity (-) 	<ul style="list-style-type: none"> • % of births attended by skilled health personnel – health infrastructure (+)
Nattrass (2008a)	<ul style="list-style-type: none"> • WB Political stability – conducive to good administration & prioritization of health (+) • <i>Established democracy dummy – established democracies likely to have better functioning administrations (+)</i> • <i>Language fractionalization – raises cost of providing information & services in more than one language (-)</i> 	<ul style="list-style-type: none"> • % of births attended by skilled health professionals – capacity & reach of health sector (+)
Haacker (2009)	<ul style="list-style-type: none"> • WB voice & accountability – political environment (+) 	<ul style="list-style-type: none"> • Birth attendance (by skilled personnel) – health sector capacity (+) • <i>No. of physicians per 1000 inhabitants – health sector capacity (-)</i> • No. of nurses per 1000 inhabitants – health sector capacity (+) • <i>WB government effectiveness – perception of government effectiveness (+)</i>

2.2. Discussion of political factors

Nattrass (2006) looked at the determinants of HAART coverage (for June and December 2004) in a cross-country, cross-sectional study of 77 transitional and developing countries. In her view, HAART coverage is a function of the socio-economic constraints and institutional capacities of different countries, and the

political commitment shown by national governments.⁶ By graphing the residuals (difference between actual and predicted levels of HAART coverage obtained from regression analysis), Nattrass (2006:335) shows that countries such as South Africa, Zimbabwe and Tanzania performed worse than their level of economic development, institutional capacity and domestic epidemiological characteristics predicted. Interestingly these countries already had bad reputations for poor leadership and commitment on HIV/AIDS policy. A key assumption of her argument is that the unexplained portion of the variance in HAART coverage has to do with political will and commitment. Those countries with residuals larger than a particular threshold have performed poorly and show low levels of political commitment. Conversely countries that performed better than predicted were those often associated with strong, decisive leadership on AIDS policy (e.g. Brazil, Cambodia and Uganda). Her paper also highlights the centrality of economic and regional factors in determining the levels of HAART coverage. Throughout her analysis controlling for per capita income, national expenditure on health and whether the country had a democratic political regime contributed positively to HAART outcomes. The paper also found evidence that better outcomes could be associated with countries in Latin America and Sub-Saharan Africa, as well as with countries where the prevalence of HIV was higher in urban areas.

In terms of political factors, Nattrass's contributions in 2006 and 2008 account explicitly for whether a country was an established democracy, making the argument that established democracies were likely to have better functioning administrations. In her model using HAART coverage for December 2004 she adds that the strength of the democracy variable could reflect an implicit preference for democratic countries on the part of international donors, or a greater efficiency on the part of democracies to translate international assistance into good HAART coverage outcomes (although she adds that this cannot be gleaned directly from her data) (Nattrass, 2006:335). The inclusion of a variable for voice and accountability which is intended to represent the degree of political pressure on government does not contribute significantly to her model. This result may be because high levels of government accountability are typically associated with established democracies, and there may thus be a high correlation between these two variables. Nattrass's use of regression residuals to approximate political will and commitment is criticized in Schwardmann (2008). He finds that using the residuals of the HAART regression as an indicator of political will assumes that the original model had no errors in specification and that no variables were omitted (Schwardmann, 2008:7). He argues that the residual or error term could also be picking up measurement errors in some of the other explanatory variables which make it even less accurate as a predictor of political will. Nattrass (2008:3) acknowledges that the residuals absorb the influence of all missing variables other than political will and asserts that performance assessments of this kind should thus only be made for countries with residuals that are consistently smaller or larger than a given threshold.

⁶ See also Nattrass (July, 2008:3) in which she addresses the issue of political leadership and its influence on HAART coverage

Lieberman (2007) performs a cross-sectional analysis using pooled, time-variant data for a set of AIDS policy response variables, and control variables including adult HIV prevalence, GDP per capita, Polity IV political regime score, degree of urbanization, government effectiveness, public health expenditure, and overseas development assistance. His work looks at developing countries with per capita incomes of less than US\$8000, and generally excludes countries with populations of less than 500000 or those located outside the world regions of Africa, Asia, Latin America, and the Caribbean. He includes 5 different AIDS policy response indicators as dependent variables – HAART coverage (2004-5), the AIDS Program Effort Index (API), AIDS-related government expenditure per capita, AIDS-related donor expenditure per capita, and the number of times HIV/AIDS was mentioned in budget speeches. In this paper, we focus on his model for HAART coverage. In his analysis, Lieberman finds strong evidence in support of his central hypothesis that ethnic fractionalization has a negative effect on HIV/AIDS policy outcomes using each of the different policy measures. Specifically, he finds that HAART coverage is substantially lower in ethnically fractionalized countries – based on estimated parameters, and setting all other variables to their means he finds that “moving from the highest to the lowest level of cultural fractionalization in his data would shift the expected value for treatment coverage in an African country from 16.2% to 29.5%” (Lieberman, 2007:1425). We draw from this analysis of cultural fractionalization as a critical determinant of HAART coverage to add value to our understanding of how political systems and institutions affect HAART coverage.

Lieberman (2007) does not find statistical support for the Polity IV regime-type indicator which returns a negative and non-significant coefficient in the HAART coverage model. However, we do think that this variable is an important one which we will apply in our analysis for reasons we will return to shortly.

Schwardmann (2008) assesses the determinants of HAART coverage using 2006 treatment data and the provision of antiretroviral drugs to pregnant mothers, Mother-to-Child-Transmission-Prevention (MTCTP) coverage for 2005. Although we choose to focus on HAART coverage in this paper, it is important to note that MTCTP will often form part of an overall government treatment strategy and as Schwardmann notes; governments may choose to prioritize the provision of MTCTP over HAART on the basis of cost-effectiveness and moral judgment. His justification for this is that it is far easier to motivate “to save the lives of innocent babies than to extend the lives of those who may be blamed for becoming infected through their own behaviour” (Schwardmann, 2008:9). MTCTP can be more cost-effective because providing treatment to pregnant mothers at antenatal clinics focuses on a small subset of the infected population in a country (pregnant women) and thus requires less financial resources to implement. Schwardmann adds that although both HAART and MTCTP entail the intake of ARVs, MTCTP is a short-term treatment intervention whereas HAART is a long-term intervention. In this way, the analysis of determinants for HAART is different from that for MTCTP, and we choose to focus on the provision of HAART which has more implications for governments in terms of resources and political commitment, particularly in a long-term perspective.

Schwardmann (2008) provides a comprehensive analysis of the political determinants of HAART coverage in his cross-sectional analysis of countries with an HIV prevalence of above 0.1%. He includes a set of political variables which include a dummy variable for established democracies (as in Natrass (2006)), state legitimacy, electoral accountability, press freedom, political stability, and cultural fractionalization. The only one of these variables which is statistically significant in his analysis is the democracy dummy, alongside the statistically significant controls for GDP per capita, HIV prevalence, the proportion of HIV positive people in urban areas, and public and external funding. We do not agree with Schwardmann's approach of including such a wide set of political variables which may each have a strong and positive correlation with the democracy dummy (aside from cultural fractionalization which is also not statistically significant in his model). As we presented earlier, these variables seem to represent a set of general principles or values that are typical of established democracies in any case. Indeed, Schwardmann does concede that electoral accountability, press freedom, and political stability are all closely related, if not features of democracy (Schwardmann, 2008:23). Democracy can thus be taken as the meta institution that 'aggregates' the impact of electoral accountability, press freedom, and political stability in the model (Schwardmann, 2008:23). So even though the coefficient of determination, R^2 (which is an indication of explanatory power in the model) increases when this full set of variables is included, we consider that R^2 is in any case a non-decreasing function of the number of explanatory variables in the model and cannot be taken as an indication of the relevance of the additional political variables. As we will discuss in Chapter 3, the 3 political variables included in our analysis speak to more distinct institutional aspects of political systems that can affect HAART coverage across countries.

Natrass (2008a) includes a broadened set of political variables in her analysis of the determinants of both HAART coverage for December 2006 and MTCTP coverage data for 2005. Building on her 2006 contribution, she includes the established democracy dummy because established democracies are likely to have better functioning administrations than new democracies; the World Bank political stability indicator because stable regimes are conducive to good administration and the prioritization of health concerns; and a language fractionalization measure with the view that high levels of language diversity constrain HAART rollout by raising the cost and difficulty of providing information in more than one language (Natrass, 2008a:5). Her analysis for HAART coverage finds strong statistical evidence that established democracies do have higher levels of HAART coverage, and that countries with high language fractionalization achieve lower levels of coverage. The measure of political stability has a positive coefficient but was not statistically significant.

While we agree with the measures Natrass includes for political stability and language fractionalization, we find that using a dummy variable for whether a country is an established democracy or not is limiting

in that it presupposes the fact that democracies are the most effective at providing HAART coverage.⁷ It doesn't add value to our understanding of how, other things equal, countries like Cambodia, Cuba, and Namibia that achieved HAART coverage of above 70% in 2006 were able to achieve this despite not being established democracies or democracies at all, or why Ghana and India which were classified as established democracies had only achieved 2006 HAART coverage of less than 20% (UNAIDS historical coverage data). Considering rationally that there are many more countries that aren't fully established democracies, a thorough analysis of determinants needs to account more attentively for the likely HAART policy outcomes in, say, transitional regimes, new democracies or non-democratic countries. Indeed there are a number of approaches described in the literature for classifying countries based on the characteristics of the political environment in each country, some more relevant and comprehensive than others.⁸ We believe that a more comprehensive measure of regime characteristics like the Polity IV regime-score that provides integer scores for countries in a wide range from '-10' for strong authoritarian regimes, to '+10' for strong democracies (and scores in between for countries with a combination of democratic and authoritarian features) is more appropriate.

What is important about the Polity IV measure is that the democratic qualities of a government are evaluated on a separate set of criteria including factors such as the competitiveness of political participation (competitive to factional) and executive recruitment (election or transitional), and the political constraints placed on the executive. On the other hand, autocratic characteristics are evaluated based on different categories specific to different degrees of autocratic regimes (repressed or suppressed) (Marshall & Jaggers, 2005:13). The advantage is that when the democracy and autocracy scales are combined into the 21-point scale by subtracting the autocracy score from the democracy score, we can tell the difference between an autocratic government with some democratic characteristics and a democracy with at least some autocratic tendencies. This can add more depth to our analysis in terms of comparing particular features of a regime in one country to another than a binary dummy variable in which a country is either an established democracy, or not. By indicating the 'degrees' of democracy or autocracy the Polity IV regime scores allow us to compare in a more comprehensive manner the performance in terms of HAART rollout of new democracies in transition, versus that of established democracies or strong authoritarian states which were simply grouped together in Natrass's model. Using this measure we can also test for a potential non-linear relationship between regime-type and HAART coverage which you can't do with a dummy variable, a method used in Gizelis & Malotte (2004). We describe their methodology in section 2.3.1 below.

Haacker (2009) only includes the World Bank indicator of 'voice and accountability' as a political variable in his analysis of HAART coverage for the period 2004 to 2007. Haacker (2009) includes separate

⁷Natrass includes this variable in both her 2006 and 2008a paper

⁸ Munck (1996) provides a detailed discussion of different conceptualisations of political regimes and democratisation in particular; Munck and Verkuilen (2002) provide an extensive review of alternative indices for measuring democracy by comparing different datasets on democracy frequently used in political science literature

regressions for ‘domestic’ determinants of HAART, and general determinants including external factors such as external donor aid. In both of these specifications, the ‘voice and accountability’ variable which looks at the political environment and the accountability of governments the coefficient is positive but it is not statistically significant. We do not consider voice and accountability in our model because much like the variable for electoral accountability in Schwardmann’s model, it is most likely a specific feature of democracy as a meta institution and will not add substantive value to our analysis which focuses on political systems and institutions in all regime-types.

2.3. Discussion of capacity factors

The inclusion of variables that account for the overall capacity of governments to deliver HAART is fairly limited if financial variables are viewed as different from infrastructural or physical capacity as we outline in this section. We take the view that financial or economic variables such as donor aid or public expenditure on health make a rollout financially feasible and form a category of their own when we look at the determinants of HAART coverage. Funds represent the most important means to initiate and sustain a rollout, but having funds alone without the necessary capacity in terms of health facilities, human resources, and distribution networks to ensure that antiretroviral drugs reach the people who need treatment decreases the likelihood of a successful rollout. The capacity requirements on governments in terms of providing HAART stretch well beyond procuring medicines. Stewart (et al, 2004:8) summarizes the obstacles to the delivery of HAART in developing countries as: financial (high cost of providing treatment and drugs which are the largest component of total costs); organisational (weak health infrastructure and systems to deliver treatment); physical (lack of transport and transport infrastructure for people to get access to testing, drugs, and monitoring); social (discrimination and stigma toward people with HIV by society and treatment providers that refuse or offer sub-standard treatment based on this stigma). Although this list is not exhaustive, it provides an indication of the fact that providing an effective HAART rollout programme requires organisational and physical state capacity outside of the financial requisites. Adequate clinics, hospitals, nurses and physicians are just as important as the transport networks that enable an effective domestic drug supply-chain and allow people to reach testing and treatment centers.

The studies included in Table 2.1 almost exclusively look at the percentage of births attended by skilled health personnel, and the World Bank government effectiveness indicator as measures of capacity. Nattrass (2006 & 2008a), Schwardmann (2008), and Haacker (2009) each include the health personnel variable which essentially serves as a proxy for the reach and (human resource) capacity of the health sector – only Nattrass (2006) finds that this variable is statistically significant. Examples of Namibia (Benavides, 2007), Botswana (Stewart et al, 2004), Malawi and Ethiopia (AIDS Map, 2008) consistently highlight the importance of human resources for health in HIV intervention and treatment provision. In Nigeria, human resources and finances were found to be critical to increasing treatment coverage (Kombe et al, 2004). However, we do not agree that an indicator for the number of births attended by

skilled personnel is the best available proxy for the overall reach and capacity of the health sector for providing HAART. The number of births (and thus the number of these attended by skilled personnel) pertains to a small, non-representative subset of the proportion of people in a country that need treatment overall. Indeed, both Nattrass (2008a) and Schwardmann (2008) only find this variable to be positive and statistically significant in their respective regressions using MTCTP coverage (2005 data) as a dependent variable. We take the view that a broader indicator such as the number of nurses or physicians available per 1000 people in the population is more applicable in the case of HAART provision which typically requires more resources to reach a broader population than providing MTCTP treatment, particularly in countries with large epidemics.

Haacker (2009) looks at both treatment coverage and the share of people receiving treatment as a share of the country's population, and finds that human resource capacity in the health sector produces ambiguous outcomes. We would expect that having more physicians available in a country will have a positive relationship with HAART coverage as they provide the human resources for implementing a rollout, and they can also be good lobbyists to government for further treatment intervention which should produce greater HAART coverage outcomes (Schwardmann, 2008:12). However, Haacker (2009) finds that for a small sample of 37 low-income countries, the number of nurses per 1000 inhabitants has a negative impact on treatment coverage yet the number of doctors has a non-significant positive relationship. On the other hand for an expanded sample of 80 countries including wealthier developing countries he finds a non-significant positive coefficient for the number of nurses and a statistically significant negative impact of having more physicians in the health sector (Haacker, 2009:25). He concludes that these peculiar results reflect differences in the levels of development and the fact that human resource constraints are far more pronounced in the low-income countries which he looks at where the ratio of nurses to doctors tends to be much higher (2009:28). Most importantly these two variables have some unique impact on HAART coverage, and thus we include the number of physicians and nurses as important components of our index of state capacity which we discuss in Chapter 4.

Nattrass (2006), Lieberman (2007) and Haacker (2009) each include the World Bank government effectiveness indicator in their analysis of HAART coverage and it is found to have a positive and statistically significant coefficient. The government effectiveness indicator was generally included as a proxy for government capacity in these studies and it is expected that countries perceived to have effective governments in terms of implementing policy overall will likely achieve higher levels of HAART coverage. By definition it measures the competence of the bureaucracy in policy formation and implementation, the quality of the public service, and the credibility of government's commitment to policies based on a range of sources and underlying variables (Kaufmann et al, 2005; and Lee & Whitford, 2008). In this way government effectiveness relates to the institutional and bureaucratic capacity of government to implement HAART policy. More than funding, an effective rollout requires a government to have a comprehensive national strategy for implementation and the bureaucratic capacity to coordinate a multisectoral programme.

The advantage of the WB measure of effectiveness is that updated data are readily available for most countries.⁹ A concern with this measure for our purpose is that as with many other composite measures, the government effectiveness index can also be criticized for relying heavily on a range of subjective views from respondents in different countries. This draws into question the comparability of results from different countries (even though the survey questions are similar) - to quote from Lee & Whitford (2008:10), "the index is constructed from multiple items, multiple respondents, and multiple survey houses and was carried out in multiple countries". Although the index has the advantage of capturing a greater amount of detail about the complex dynamics of government performance, the subjectivity in terms of understandings of effectiveness and potential bias among government respondents particularly must be taken into consideration when applying it to our analysis. We should at least be cautious to compare government effectiveness scores across countries. Despite these concerns, the government effectiveness indicator is widely applied in economic and political science literature such as the papers referred to in this section and we apply it to our analysis of the determinants of HAART coverage as a component of our state capacity index.

As we have described in this section, there are a limited number of measures of state capacity that are applied to the analysis of HAART coverage. Of the papers reviewed, there is a bias towards indicators of human resources for health, and a lot less is said about other forms of state capacity such as transport infrastructure. As we discuss in Chapter 4, there is scope to draw from broader measures of domestic state capacity than those discussed in this section in our analysis of the determinants of HAART coverage.

2.4. Other relevant literature

In this section we consider two studies on the determinants of HIV policy outcomes to specifically highlight how they have addressed political systems and state capacity as explanatory variables, and aspects of their respective approaches that can be applied to our analysis. Our discussion focuses on the analyses of Gizelis and Malotte (2004), and Price-Smith (et al, 2004). It is important to bear in mind our earlier discussion of the differences between studies of prevention and treatment strategies.

Gizelis and Malotte (2004) apply a time-series cross-sectional model on a sample of 117 developed and developing countries over the period 1987 to 2000, to evaluate how a variety of domestic factors influence the HIV infection rate as a dependent variable across countries. They calculate their dependent variable by taking the annual number of new infections and divide this by the country's population to get a per capita rate of infection for each country. Of particular interest for our purpose

⁹ Available: <http://www.worldbank.org/wbi/governance>

are their applications of the Polity IV regime classification (which Lieberman (2007) also included) and their measurement of state capacity using political extraction. Political extraction is estimated using the ratio of a state's actual government revenue to the predicted revenue.¹⁰ The estimated ratio is a measurement of the ability of governments to penetrate society and to extract resources measured over time with data available for the years 1960 to 2000 (Gizelis & Malotte, 2004:15). Their argument on state capacity is that states with "higher levels of political extraction are more efficient at implementing policies, not only because they acquire more resources, but also because the state mechanisms are more efficient in accessing the population" (Gizelis & Malotte, 2004:15). On political regimes, they hypothesize that democracies tend to be more efficient and responsive to the needs of the population and in this way more they are more effective at reducing the spread of HIV. They also test the hypothesis that countries ranking high on democracy on the Polity IV classification, or high on authoritarianism tend to have higher levels of state capacity and a lower rate of new infections. They test for this effect using the square of the Polity IV regime score to emulate a non-linear relationship between political regime classification and rates of new HIV infections (ibid, p. 16).

Their primary findings were that state capacity was associated with lower rates of HIV infection and that political regimes had an inverted-U relationship with the rate of new infections (Gizelis & Malotte, 2004:19). In this sense, countries with strong democratic characteristics, as well as those with strong autocratic characteristics showed better results in terms of slowing the HIV infection rate.

Although the authors focus on new infections which relate to HIV prevention strategies and not treatment intervention, we draw two important insights from their analysis. The first is that broad measures of state capacity such as political extraction can be applied to the analysis of AIDS policy outcomes, and potentially HAART coverage. In terms of our research questions, we can expect to find that countries with high levels of state capacity will tend to have higher levels of HAART coverage. We do not apply their measure of political extraction because data is mostly available up to 2000, whereas the scaled up provision of HAART globally applies more to the period after the UNGASS declaration in 2001. Instead as previously outlined, we use a measure of tax revenue as a share of GDP, and the state capacity index which we draw from Price-Smith (et al, 2004) discussed below, and discuss further in Chapter 4. The second approach that we draw from the analysis in Gizelis and Malotte (2004) pertains to domestic political institutions and our research question on how political institutions work to enable better HAART coverage outcomes. Specifically, the authors introduced the square of the Polity IV regime classification to test whether there may be a non-linear relationship between their dependent variable and the type of political regime. In our analysis we would want to see whether there is any evidence to suggest that a non-linear relationship exists between HAART coverage and political regimes such that highly authoritarian systems are also likely to result in higher HAART coverage compared to

¹⁰ Predicted revenue is estimated using the following regression equation: $\text{Tax/GDP} = \beta_0 + \beta_1 * (\text{Time}) + \beta_2 * (\text{Mining/GDP}) + \beta_3 * (\text{Agriculture/GDP}) + \beta_4 * (\text{Exports/GDP}) + e$

democracies. We present a discussion on this in Chapter 3 and test for this relationship in our statistical model.

Price-Smith (et al, 2004) sought to address the question of why some countries had successfully combated the spread of the AIDS epidemic by reversing the rate of new HIV infections (or incidence), while others had not.¹¹ Again this approach looks at HIV infection which is mainly part of prevention intervention but there are elements of this approach that we can extrapolate to our analysis of HAART coverage. The study assesses a sample of 50 UN member states affected by the AIDS crisis. In this study the authors created an ‘HIV/AIDS adaptation variable’ which was “measured as the percent change from the historical maximum of HIV incidence in each nation”, which was used as the dependent variable (Price-Smith et al, 2004:152). In their view, countries that had successfully adapted to HIV were those that had experienced a decline in the rate of HIV incidence from the historical maximum (apex) of HIV incidence in that country – the apex is an inflection point after which HIV incidence declines. A score was given based on ‘how much’ incidence had decreased compared to its highest level (historically) in a particular country. By way of example, a country that had a historical HIV incidence rate maximum of 10% in a previous year and had successfully reduced the HIV incidence rate to 8% for a subsequent year (a reduction of 20%); would have an HIV/AIDS adaptation score of 20. A country that does not see a decline in the rate of new infections is categorized as a mal-adaptor and receives an AIDS adaptation score of zero (Price-Smith et al, 2004:152).

Our focus will be on the state capacity index introduced as an explanatory variable in Price-Smith (et al, 2004). The index they develop is a composite measure of the state’s capacity based on a series of weighted and standardized variables reflecting a country’s resources, infrastructural capabilities, and performance of government functions (Price-Smith et al, 2004:151). It represents a resource-centered approach to measuring state capacity by accounting for aspects of endogenous state ability to implement policy in the form of infrastructure, human capital and economic development. The authors argue that the ability of a country to adapt to the epidemic is dependent on its levels of endogenous capacity (as measured by the index) in terms of economic, infrastructural, and human resource capabilities. The index includes variables for: Gross National Income per capita, government expenditure, school enrollment, military spending, physicians per 100000, telephones per 100000, and the percentage of paved roads in the country. Each of these pertains to an aspect of state capacity. Using a tentative set of weights for each variable, the authors use Principal Component Factor Analysis (PCFA) to rank the variables based on how much of the variance in the data they each explain. The authors use this method to confirm their preliminary weighting scale for the index and to summarize which of the variables are closely related to the underlying concept of state capacity based on a correlation matrix. This analysis found that the five variables essential for economic development were ultimately the most significant in defining state capacity i.e. school enrolment, roads paved, physicians

¹¹ According to UNAIDS, HIV incidence (sometimes referred to as cumulative incidence) is the number of new cases arising in a given period in a specified population (UNAIDS Terminology Guidelines 2008).

per 100000, telephones per 100000, and GNI per capita (Price-Smith et al, 2004:158). Applied to the AIDS adaptation variable, the index was found to have a positive and statistically significant relationship with the AIDS adaptation variable (based on HIV incidence) in their regression analysis.

The index doesn't purport to account for anything other than the actual resources which the state has to implement policy with. This is both advantageous and limiting. While the simplicity of the index is encouraging, Price-Smith (et al, 2004:156) do concede from its application that it doesn't sufficiently account for political will and community mobilization that are viewed as critical to the success of a national AIDS response. It is however still useful in controlling for the pragmatic *ability* of a country to respond to the AIDS epidemic. We are of the view that an index of state capacity such as this one can be used to address our research question regarding HAART coverage. We have described HAART as a resource-intensive policy programme that requires a wide range of (domestic) financial, organisational and infrastructural capabilities in order to provide treatment to those who need it. A measure such as this allows us to use proxies for these exact aspects to assess each country on their endogenous capacity, and then apply this to test our hypothesis that countries with high levels of state capacity are able to achieve higher outcomes in terms of HAART coverage. Using this as motivation and the methodology described above, we create our own state capacity index using a different combination of variables. Our index is described in detail in Chapter 4.

2.5. Contributions to the literature on HAART coverage

This paper seeks to contribute to the literature on the determinants of HAART coverage across countries. The two research questions which we seek to answer were clearly outlined as follows:

1. How do political institutions work to enable better HAART coverage outcomes?
2. Do countries with higher levels of state capacity as measured by tax revenue as a share of GDP or an index of state capacity tend to have higher levels of HAART coverage?

These questions form the basis of what we hope to contribute to the literature on HAART coverage. We hope to add to the understanding of how domestic factors in terms of political systems and endogenous state capacity are critical to effective HAART rollout.

In relation to political factors we shift away from the convention of including a wide set of controls for factors that are effectively normative features of a democratic environment such as electoral

accountability and press freedom.¹²These political variables do not really emphasize pragmatic influences on government decision-making and implementation such as whether to devolve political decision-making authority to sub-national government levels, or whether the leader of a minority ethnic grouping will risk reputational damage by highlighting the need for a HAART rollout programme amongst his own people. For this reason, we look at three targeted political variables that we believe speak directly to how political systems function to affect decision-making and implementation of HAART rollout programmes as discussed in Chapter 1. From the literature, we draw from analyses that have applied the Polity IV regime classification indicator which is more comprehensive in how it accounts for characteristics of a political system in terms of decision-making and powers of authority. We also draw from the views on fractionalized societies and how politically salient ethnic and cultural differences impact directly on the decision-making processes of governments regarding HAART rollout programmes. We then introduce a new aspect of how political systems function to implement HAART rollout policy by including a discussion on decentralization.

In terms of state capacity, we introduce two new indicators of state capacity to the literature on the determinants of HAART, namely tax revenue as a share of GDP and a state capacity index. We take the view that the government effectiveness indicator used in the literature only reflects a narrow aspect (bureaucratic and administrative) of the broader capacity of the state to implement policy. We believe that our index of state capacity provides a broader perspective – by including government effectiveness and indicators of health sector personnel alongside other proxies for state capacity, we will gain a more accurate perspective of the capacity of a country to implement HAART policy.

¹²See Hyden et al (2004:1) on the tendency towards normative assumptions and preferences in studies of democracy.

3. POLITICAL SYSTEMS AND HAART COVERAGE

This chapter sets out the arguments pertaining to how political systems work to enable higher HAART coverage outcomes. In our view, increasing access to HAART is about government decision-making, resources, and implementation. In the introduction to this paper we presented the view that an analysis of political factors as determinants of HAART coverage needs to focus on how decisions are made and how they are implemented to ensure an effective rollout. We therefore delineated a limited set of factors that we consider as relevant to the discussion of political systems, decision-making and implementation, namely: political regime, cultural fractionalization and government centralization. This chapter systematically discusses each of these aspects in turn and details how they ultimately impact on the levels of HAART coverage across countries.

3.1. Political regimes and their impact on HAART coverage

Political regime-types are the context within which policy-making and implementation take place – they guide the process at large (Hyden et al, 2004:2&12). Contrary to the UNDP view that the best form of good governance is democratic governance (quoted in Strand et al, 2004:61), this definition does not suggest that one form of political regime-type is necessarily better than another at managing policy-making and implementation processes. The effect of political regimes on policy is indirect in that political regimes only shape the environment in which policy decisions are made. According to Munck (1996), political regimes have both a procedural and behavioural dimension; the procedural element pertains to the formal or informal rules that “determine the number and type of actors who are allowed to gain access to the principal governmental positions, the methods of access to such positions, and the rules that are followed in the making of publicly binding decisions” (Munck, 1996:8). The behavioural dimension refers to how these rules are then accepted by major political actors. For instance, in a democracy the political actors are the leaders of the different political parties elected through competitive elections the results of which are generally accepted by the opposition. In an authoritarian regime there is a ruling elite closely linked with the military and decisions are made to maintain patron relations with the elite class. It is within this framework that policy-making and implementation take place – for instance, in a democracy elected political actors have a political incentive to compete for votes to retain political power and support of different social groupings and as such we can expect that redistributive social provision will increase and policy provisions to cater for the interests of different social groups are likely to be prioritized.

The evidence presented in the preceding chapter does suggest that established democracies tend to achieve higher HAART outcomes than other regime-types (Nattrass, 2006 & 2008a; Schwardmann, 2008). It is thus important for us to develop a further understanding of why democracies are likely to result in higher HAART coverage outcomes in terms of their decision-making processes and implementation; and why other regimes do not seem to achieve the same policy outcomes? The importance of this critical analysis is well articulated by Per Strand on AIDS governance as follows:

“Analyses of AIDS governance should also include impact studies - analyses of causality. They must seek to clarify what impact different governance responses have on the epidemic. Analytically, we should think of AIDS governance as a variable and not as a postulated ideal. Our analyses should frame AIDS governance as an independent variable that potentially can explain some of the differences in degrees of effectiveness of government responses (Strand, 2007:3).”

Translating this to our analysis of HAART; the political factors which we account for in our analysis must speak directly to how political systems and governance structures *actually* result in variations in the levels of HAART coverage across countries. To answer these questions, it is best to provide a generalized definition of democracy in order to frame our discussion of its interaction with HAART programmes. In an exploration of democratization in Africa, Alison Ayers states:

“According to the orthodoxy, democracy comprises: the periodic election of political representatives via credible multiparty elections and a universal franchise; constitutionalism, the rule of law and a particular conception of ‘human rights’; ‘good governance’, characterized by minimal, ‘neutral’, accountable, transparent and participatory government with an effective bureaucracy; and a pluralist, ‘independent’ civil society” (Ayers, 2006:323).

This description characterizes democracy as an inclusive and participatory political system in which decision-making is premised by a body of legal rules and constitutionalized human rights principles with entrenched structures of political accountability. In our view, providing and expanding access to treatment as we’ve described above is about taking decisions to implement or expand a rollout programme, and implementing those decisions effectively. In this way, there are some obvious synergies between democracy as defined above, and what it takes to provide access to treatment. In terms of political factors, we believe that at a high-level, government makes the decision to provide treatment on the basis of constitutional human rights to health, the demands of the voting public and the threat of electoral and civil accountability should they not provide adequate leadership in terms of combating the epidemic. Their ability to implement this decision then relies on an effective bureaucracy and good governance systems, as well as the resources and capacity available to the domestic government for implementing a rollout based on funding and state capacity which we discuss in the following chapter.

The mechanisms described here are revelatory in terms of enhancing our understanding of how democratic political regimes enable better HAART coverage policy outcomes. A good example of how these mechanisms between democracy and HAART coverage outcomes might work is that of post-1994 South Africa. The Treatment Action Campaign (TAC), a civil activist organisation in South Africa, was able to pressure the South African government into instituting a full-scale HAART rollout. The organisation

mobilized large sections of society including groups of those living with HIV and those affected by the epidemic to protest against the government's inaction and lack of delivery of comprehensive treatment and care. They achieved this through a combination of mass action, civil disobedience campaigns, and legal action as described in Willan (2004) and Mackintosh (2009). In 2001, TAC even launched a legal case against the government that made it all the way to the Constitutional Court, which ruled that government had to provide MTCTP with immediate effect (Mackintosh, 2009:18). The ANC government in South Africa won the elections in April 2004 with a 69.68% majority despite broad criticism of its policies on AIDS (Willan, 2004:1). There was also widespread criticism of President Mbeki's questionable stance on HIV/AIDS, in which he was described as an AIDS dissident or denialist (Mackintosh, 2009:5). Willan (2004:2) presents the view that part of the reason for the ANC retaining a great deal of support through the 2004 elections despite heavy criticism was because it had finally agreed late in 2003, under significant social pressure and in view of the looming elections, to initiate a full-scale HAART rollout.

We see in this instance that government ultimately responded to the views and demands of civil society and the voting public. They made a decision under significant pressure to adhere to the legal and constitutional rights to health; under the threat of electoral accountability should they not act to provide treatment. Even in Brazil, as we described in the introduction, the provision of HAART was based on concerted government action, strong participation of civil society, an inclusive multisectoral mobilization, and advocacy for human rights. While the examples of South Africa and Brazil may lie at the extreme in terms of how democratic processes such as electoral accountability might influence government decision-making in terms of providing treatment, they serve to highlight a very important point for our analysis: democratic systems tend to incorporate a range of decision-making and accountability structures that make it more likely that the domestic government will be responsive to the demand and need for HAART. Indeed, it is a widely held view that democracies are typically more responsive to the needs of their constituents and therefore more accomplished in the provision of public goods (Coopamah, 2008:10; Haven & Patterson, 2005:80; Strand et al, 2004:56). There is certainly some agreement in the literature on the positive effect of democratic governance on AIDS policy outcomes in general, and some of these discussions are relevant for the provision of HAART coverage as well. These effects include but are certainly not limited to the following:

- A government that demonstrates a high regard for human rights will typically prioritize the needs of minority groups and those who are often discriminated against including people living with HIV/AIDS (Hsu, 2004:3). Nelufule (2003:2) states that a common respect for the rule of law and the protection of human rights offer the opportunity for HIV to become an openly discussed issue which could serve to reduce the stigma surrounding it both within the national leadership and amongst those living with the virus. Governments (such as in Brazil) may thus place a greater emphasis on providing life-saving treatment to minority groups in society and creating a non-discriminatory, human rights-based environment for people to come forward for testing, treatment and care.

- A competitive electoral process introduces social and political costs for elected officials that do not act to combat AIDS, particularly in countries where the prevalence of HIV is high (Nelufule, 2004:3). Willan (2004:2) states that HIV/AIDS is increasingly more likely to become a political issue that affects people's voting patterns if more people in society (including political leaders) experience personal loss due to AIDS (e.g. losing a family member) which is most likely in high-prevalence countries. In countries with low or concentrated epidemics, the inclusivity and participatory nature of democratic systems make it more likely that the demands and need for treatment and care for even minority groups can be voiced and incorporated into government decision-making processes.
- An active civil society and free media can enhance communication and debate on issues surrounding HIV/AIDS and encourage government action as we see in the example of South Africa. These aspects of democracy are said to enhance the conveyance of the critical concerns of the public to government. They can serve to promote positive discourse on HIV/AIDS but also place a great deal of public pressure on government to respond – which is considered important when it comes to HIV/AIDS policy (Coopamah, 2008:11).

The points above certainly suggest that democracy is more likely to result in government action on HIV/AIDS, and by extension government action on providing and expanding access to treatment. In this way, democratic systems affect the *decision-making* processes of government. This provides the logic for why we have to control for regime-type in our analysis of the determinants of HAART, and why other authors throughout the literature have addressed this as well. It is however also worth noting that some of the views surrounding the efficacy of a democratic political system in terms of AIDS are based on normative views – what we expect of how things ought to be regarding democracy and AIDS.¹³ If it is to add real value, our analysis of the determinants of HAART and the (potentially) positive effects of democracy for the provision of HAART must critically discuss this relationship based on evidence.

The reality is that democracy *doesn't* have a perfect score when it comes to delivering public goods and enhancing human development.¹⁴ In an analysis of democracy in the Third World, Pinkney asserts that “the justification for democracy has never been simply that it offers a better means of material advancement, but unless it can give voters something in return for their votes, no amount of philosophical argument about liberty, human rights, or political choice will ensure its survival” (Pinkney, 2004:6). Certainly in terms of AIDS, Strand (2007:1) goes so far as to state that response approaches framed by democratic ideals and institutions have little to show in the way of reversing the trend of the epidemic in Africa. On this, he adds that we must assume some political failure to respond to the epidemic in Africa since the late 1990s when we consider that: the epidemic has become generalized in the population over this period; HIV incidence remains high which signals a failure of prevention

¹³ See Hyden et al (2004:1) on the tendency towards normative assumptions and preferences in studies of democracy

¹⁴ See for example Tsai (2006); Gasiorowski (2000); Ross (2006); Keefer and Khemani (2005)

interventions; and that there are still vast numbers of people suffering ill-health and often dying from the disease despite the availability of life-prolonging treatment (Strand, 2007:2). We now discuss some of the potential shortfalls of democracy in this regard.

3.1.1. Potential shortfalls of democracy in providing HAART

This section outlines some of the concerns that can arise in democratic political systems and their relation to AIDS policy. Many of these shortfalls as we will mention below can directly affect the level of HAART coverage in a country especially by making it less likely that government will prioritize the epidemic in their decision-making and commit resources to providing treatment. These imperfections challenge the view that democracy necessarily results in better outcomes in terms of HAART policy.

The first point to consider is that some of the celebrated strengths of democracy could also serve as inhibitors to AIDS interventions. For instance, in a democracy we assume that people vote for individuals and organisations that best reflect their ideological and policy preferences. However, in a democratic country characterized by high levels of HIV/AIDS stigma it can thus occur that the majority of the voting public does not perceive HIV/AIDS to be a significant risk factor and therefore does not perceive the need for treatment to be made widely available. These voters may also feel that HIV/AIDS is a problem that only affects a certain minority group and doesn't warrant the immediate attention of government in relation to other competing developmental priorities. In this situation the result could be that despite the urgency of the AIDS crisis, the issue may not feature high on the political agenda and would be sidelined in exchange for other priorities. For instance, in South Africa as we discussed above the ANC government was able to achieve an overwhelming majority in the 2004 elections despite the expectation that people would be alienated from the party due to their unpopular stance on AIDS.¹⁵

In a resource constrained setting such as Africa, there certainly isn't an overwhelming consensus amongst the citizenry about whether governments should commit more time and budgetary resources to combating HIV/AIDS or providing treatment. This is despite the alarming HIV prevalence rates in the region. The 2nd round of the Afrobarometer Surveys including 15 African countries in the period 2002-3 reveals that "Africans are undecided about the importance of AIDS, with equal proportions advocating either spending more (45%) or spending less (46%)" on AIDS (Bratton et al, 2004:26). This is in response to questions about whether government should spend more on HIV/AIDS even at the expense of other priorities like education, or whether they should rather focus on solving the many other problems in the country (ibid, p. 26). While these opinions may be due to a number of concomitant, country-specific factors, they certainly provide some indication as to the disparity in popular opinion about the attention and resources that governments should attribute to AIDS interventions.

¹⁵See Willan (2004); and De Waal (2005:2)

On the other hand, in a society where a significant proportion of the population wants AIDS to feature on the national agenda, democratic processes are no guarantee that this will happen. Post-1994 South Africa is a perfect example of a country that still failed to respond adequately to the epidemic even with a history of an active civil society, a liberal constitution and an independent media (Furlong & Ball, 2005). This can be due to a host of political reasons. The first of these is that as Downs concludes, democratic governments will always act to maximize the number of votes that they receive (Downs, 1957:137). He argues that normative theories about how democracies work ignore the fact that they are a set of institutions run by ‘men’, self-interested beings who typically hold selfish motives to optimize their private gain (ibid, p. 136). For instance, the idea that political leaders sometimes conceal truths to achieve a set of political objectives is not farfetched. The example of President Mbeki in South Africa comes to mind, where it is argued that some of his publicly-stated divergent views on HIV/AIDS and initiating treatment initiatives were influenced by his personal beliefs about racism, pessimistic Western views on Africa, poverty and inequality in South Africa (Mackintosh, 2009:21). AIDS policy in South Africa has improved significantly under President Zuma’s leadership since then. Leaders may also make false promises to achieve a set of political objectives. In this case they may announce their intentions to take the matter of HIV very seriously should they be elected and expand access to treatment because they realize that it will win electoral support. However, with these perverse incentives at play it may happen that they do not follow through on those promises once elected, or may not commit the full extent of resources to the policy. In countries where the issue of AIDS is often in the public spotlight it can be used as an important electioneering tool as Willan (2004) described of the ANC in South Africa above.¹⁶

The centrality of participation in democratic institutions can result in long, drawn-out political debates and decision-making processes that delay the response of government to the epidemic. Strand (et al, 2004:67) adds that while participation is often good for legitimacy and consensus building, it could prove costly and time consuming if such a consensus is not reached – and people won’t get the treatment they urgently require.

Bor (2007:1598) suggests that there is a disincentive for political leaders to address certain matters that may not reach fruition in their term of democratic office. This is a particular concern with regards to AIDS because we expect the time horizon for its eradication to be longer than one term of political office. Even with HAART which has an immediate impact on the health of those who receive it, a government’s plans for reaching universal coverage may be for the medium- to long-term due to budgetary constraints and competing developmental priorities. In fact there is evidence that political

¹⁶ For a perspective on how the commitment to allocate funding for an ARV rollout plan could have been politically motivated, see “Questions Raised About the South African AIDS Initiative”, Available online: <http://www.wsws.org/articles/2004/jan2004/aids-j17.shtml> ; Also see: “History of HIV & AIDS in South Africa”, Available online: <http://www.avert.org/history-aids-south-africa.htm>

priorities are often biased towards ‘targetable’ public provisions such as road infrastructure that are attainable in the short-term to increase the chance of re-election (Keefer & Khemani, 2005:2). In terms of providing treatment, we reasonably expect that in most cases a government does not plan to reach 100% coverage in 1 year, but rather that it might make plans to increase provision incrementally over an extended period. For the self-interested politician it simply may not be worth embarking on an expansive AIDS response programme such as HAART due to the risk of failure, especially in the short term.

A few authors have also referenced the fact that political competition may not be sufficient to ensure that the work of politicians in government reflects the desires of the constituency that voted them in (Bor, 2007:1598; Keefer & Khemani, 2005). Keefer and Khemani attribute this to the fact that once elected it is difficult for the voter to monitor the contribution of any one elected official which creates a condition of imperfect information. This means it becomes difficult to attribute credit or assign blame to politicians and hold them to account (Keefer & Khemani, 2005:5). If voters aren’t able to hold government to account then there is no political cost for non-performance and the presence of competition becomes inconsequential. This may be worsened by the absence of a credible or viable opposition to present some political threat to the incumbent government. The expectation is that opposition parties in democratic systems provide a crucial level of accountability for government by presenting a political alternative, and publicly pointing out government inaction and failure. This system of accountability falls apart if the governing party does not feel threatened by a serious opposition party, as in the case of Botswana (Coopamah, 2008:18). Therefore, while the Botswana government has received much acclaim for their financial investments towards addressing AIDS by providing widespread access to treatment, the fact that the epidemic continues to spread unabated in that country suggests that there is no political sanction for government should they ultimately fail to deliver real results on AIDS.

3.1.2. HAART coverage in authoritarian regimes

With the exception of a few countries like Uganda and Cuba which we mentioned earlier, there are very few countries with authoritarian governments that can claim to have successfully reversed the spread of HIV/AIDS. There is also very little evidence to suggest that this outcome would be any different for HAART coverage policy. There is some empirical evidence that authoritarian governments are able to achieve a great deal in terms of developmental outcomes.¹⁷ It is certainly not a foregone conclusion that democracy is a necessary condition for rapid economic development at the expense of authoritarian

¹⁷ Using a panel study of 97 underdeveloped countries Gasiorowski (2000) concludes that democracies produce higher inflation and slower economic growth in underdeveloped countries; Przeworski and Limongi (1993) conclude that the effect of political regimes is a matter that is open for debate with strong arguments formulated in support of autocracies and democracies

regimes. The reality however is that there is no apparent reason to believe that an authoritarian government would care as much about HIV/AIDS intervention as they do about economic growth.

One of the primary arguments put forward to explain the economic strengths of authoritarian regimes is that they have high levels of ‘state autonomy’ – the state is free to pursue development goals because it is relatively insulated from the interest group pressures from unions and large firms (Przeworski & Limongi, 1993:55). If we argue that providing and expanding access to HAART is about decision-making and implementation then it is not farfetched to think that an authoritarian government with a great deal of state autonomy is well positioned to initiate prevention and treatment interventions to control HIV/AIDS (which could be seen as a threat to economic development).

Some authors have certainly suggested that autocratic regimes are potentially more aggressive in their response to the AIDS epidemic (Lieberman, 2009:52). Uganda, then under the leadership of President Museveni, has earned a great deal of plaudits for its success in reversing the spread of HIV in the early 1990s. Importantly, these outcomes occurred during a time when the country embodied strong features of an authoritarian government.¹⁸ A large amount of attention has been paid to the strength of his moral leadership in a time of crisis, yet very little is mentioned about the coercive forces employed to enforce sexual behaviour change. De Waal (2006:101) discusses the fact that in many rural areas the movements of young women were halted by military force (‘Resistance Councils’) if they were thought to be engaging in ‘socially unacceptable’ behaviour. Young women who were thought to be spreading the virus were threatened with violence or lynching (ibid, p. 101). This strategy began as a measure to prevent a civil war but emerged as a tool employed for the management of HIV. Allen (2004:1127) writes that in 1986 HIV positive people in Cuba were forced to live in designated sanatoriums to contain the spread of the virus. He adds that strategies like enforced testing and condom usage, or enforced compliance with antiretroviral treatment would work for reversing the effects of the epidemic. While these examples are primarily about prevention interventions, our point is that combating HIV/AIDS using any intervention strategy is about governments taking aggressive action and committing resources to their strategy regardless of the type of regime, just as we have seen in the examples of Brazil, Cuba, Thailand or Uganda.

However, there are some countervailing factors in this argument. We have discussed the fact that although domestic governments have shown commitment in terms of funding and resources for providing treatment and other intervention strategies, a great deal of assistance is still sourced from international donors. International donors tend to be from the developed, mostly democratic states and as Nattrass suggested they may have an implicit preference for democratic countries in terms of which

¹⁸ Uganda scored between ‘-7’ and ‘-4’ on the Polity IV indicator over this period which is generally considered a government with strong autocratic characteristics (Marshall & Jaggers, 2005)

countries they choose to fund (Nattrass, 2006:335). This can affect the likelihood that authoritarian governments would receive the necessary funding and assistance to expand access to treatment, for instance. The other consideration is that the international AIDS community advocates for a human rights-based approach to AIDS intervention. One of the celebrated aspects of Brazil's campaign to provide universal access to treatment was the fact that it was premised on a systematic advocacy for human rights in all strategies and actions, which the authors add is a principle consistent with the undertakings of the 2001 UNGASS Declaration of Commitment on AIDS (Teixeira et al, 2003:73). The examples of Uganda and Cuba above clearly violate a number of democratic civil liberties.

The relationship between providing universal access to HAART and human rights is critical. It is common knowledge that HIV/AIDS is a severely stigmatized disease. People living with HIV/AIDS are frequently subject to discrimination from friends, family, colleagues in the workplace, and even health care professionals. Discrimination and human rights abuse by health care professionals includes denial of care, breaches of confidentiality, and HIV testing without consent (UNAIDS, 2004). A study in Nigeria found that one in ten care providers reported refusing care for HIV-positive patients, 10% reported refusing them access to a hospital, and 20% of health care professionals felt that people living with HIV deserved to be infected because they had behaved immorally (UNAIDS, 2004:126). The fact that HIV testing is seen as a gateway or prerequisite for receiving HAART means that creating an environment that discourages this kind of discrimination is crucial (UNAIDS, 2004:127). It also means that providing treatment to those who need it is a function of human rights and a non-discriminatory societal environment. A non-discriminatory society can encourage more people to come forward, get tested, and receive treatment, particularly those people from marginalized groups such as sex workers, injecting drug users, and men who have sex with men. In South Africa, legal action based on human rights was a vehicle to enforce people's rights to gain access to health care, including antiretroviral treatment (UNAIDS, 2004:123). We note that a prioritization of fundamental human rights is a principle most naturally associated with democracies.

If we set the examples of Uganda and Cuba aside, the issue then may not be whether authoritarian states could potentially deliver higher HAART outcomes, but if democratic governments tend to succeed in providing expanded access to HAART (as part of a national intervention strategy) when they act more authoritatively such as in Brazil. Strand (2007:7) creates a distinction between *idealistic* and *authoritative* democratic AIDS governance – where the latter refers to the legitimate *limitation* of one or more democratic principles in order to aid a more effective AIDS response by government.¹⁹ In his view, this is in contrast to the *authoritarian* (or autocratic) governance of AIDS in a political system where the government can disregard most or all of the principles typically associated with democracy. Strand (2007:17) goes on to make the point that aggressive approaches to HIV governance may not even have

¹⁹ This legitimacy draws from the fact that even these limitations are arrived at through democratic processes (electoral, legal, constitutional) which makes them consistent with democratic ideals e.g. democratic adoption of a strategy to institute compulsory HIV testing

to entail a ‘principled disregard for human rights’ but rather that as with other laws, there are often exceptions that can be made in health emergencies. As we have mentioned, the type of regime in a country provides the context in which government decision-making and implementation takes place. On the face of it, authoritarian governments which tend to place less emphasis on human rights are therefore less likely than democracies to emphasize a non-discriminatory environment in which people are free to come forward for testing, treatment and care. In this way, the levels of HAART coverage are expectedly lower under authoritarian countries.

3.2. Cultural fractionalization and its impact on HAART coverage

In earlier sections of the paper, we introduced the view that high levels of ethnic fractionalization are most likely to result in lower levels of HAART coverage. Indeed, evidence presented in the literature review confirms this. Ethnic fractionalization is widely defined as the likelihood that two people randomly chosen from a population will be from different ethnic groups, such that societies with many distinct ethnic groups will have a higher probability. This measure is simply an indicator of ethnic diversity, and diversity in terms of race, language or indigenous groups for instance, does not imply an effect on political decision-making per se. What matters most for understanding the effect of ethnic fractionalization (or fragmentation) in terms of political decision-making is the extent to which that diversity finds political salience or translates into boundary institutions – boundary institutions are the sets of rules and practices that give social and political meaning to group identities (Gauri & Lieberman, 2006:47). In his book, Lieberman (2009:247) refers to this as the ‘political salience’ or institutionalization of ethnic differences in the political life of the country. Boundary institutions “regulate racial and ethnic group categories and intergroup behavior”, examples of which can include census and other protocols for gathering and disseminating information in terms of group identities or policies that grant access to political office, jobs, and certain rights of citizenship based on group membership (Gauri & Lieberman, 2006:49). In this way, ethnic group dynamics are politically salient and can form the basis for political mobilization or social perceptions of shared risk in terms of a ‘new’ threat such as HIV/AIDS.

Where ethnic boundaries are strong, societal groups are most likely to perceive a problem or risk such as HIV/AIDS along ethnic lines. In order to maintain a positive social (group) identity they are far more likely to associate a particular risk such as HIV with another grouping i.e. “It’s their problem/It’s not our problem” (Lieberman, 2009:44). This likelihood is especially high in the case of HIV/AIDS which has a history of being a morally stigmatized condition such that no ethnic group and no leader of an ethnic group would want to acknowledge that AIDS was a problem amongst their people, to protect their reputation. Politically salient ethnic differences can find their way into the political arena when leaders do not want to raise ‘unpopular’, stigmatized issues like AIDS and the importance of giving people access to treatment for fear of losing electoral support; or a particular ethnic grouping may not want AIDS policies enacted by their leaders for fear of publicly associating their grouping with the disease – “shame of association” (Lieberman, 2007:1414). Importantly, it is in countries where ethnic differences do have

some bearing on the political arena that stigma and discriminatory views based on group identity and the shame of association are expected to influence the actual communication of ideas about HIV/AIDS risks and the nature of government policy.

Throughout the paper, we have developed the idea that providing universal access to HAART has a lot to do with government decision-making, and the effective implementation of those decisions. The arguments in this section suggest that a high degree of politically salient ethnic boundaries can negatively affect the behaviour of political leaders and government, and thus the decisions they make regarding AIDS interventions such as treatment. In addition to this, ethnic fragmentation can affect the autonomy and administrative capacity of the government by undermining government authority over the country when there are a number of political factions; slowing down deliberative processes and creating many competing interests that in turn stagnate decision-making Polidano (2000:810). While there is some scope to think that in a democracy, ethnic diversity could in principle lead to higher levels of political competition, lively debate, intra-party negotiation, and inclusivity in terms of minority group interests; there is very little empirical evidence in the literature to support this view. We therefore expect that the levels of HAART coverage are likely to be lower in countries with high levels of ethnic or cultural fractionalization.

3.3. Government centralization and its impact on HAART coverage

We have maintained throughout our discussion that providing HAART is about decision-making, resources, and implementation, and that our analysis of political factors as determinants of HAART coverage needs to focus on how decisions are made and how they are implemented to ensure an effective rollout. In this section we introduce our third factor related to how political systems work to enable better HAART outcomes: government centralization.

A centralized government is one in which decision-making authority, revenue collection and planning are concentrated within a central (or federal) government. Our discussion to follow is based on the general premise that most developing and transitional economies have until recently had centralized government structures mostly inherited from a history of colonial rule. The debate about decentralization of government represents a shift away from this norm (Shah, 2004). Decentralization can be broadly defined as “the transfer of authority and power in planning, management, and decision-making from higher to lower levels of organizational control” (Bankauskaite et al, 2004:2). In a broad public administration context, decentralization can mean: “*delegation* transfers responsibility to a lower organizational level; *de-concentration* to a lower administrative level within the same organization; *devolution* implies transferring authority to a lower political level; and *privatization* takes place when assets and/or responsibility are transferred from public to private actors” (Bankauskaite et al,

2004:2).²⁰ Our discussion does not look at each of these in turn, but rather considers each of the concepts as sub-categories of our main organizing concept - decentralization. The primary distinction we make therefore is simply between centralized or decentralized systems. From these definitions we can draw some obvious parallels between political decision-making and implementation for the provision of HAART, and the concepts related to centralization and decentralization. The concepts of authority and planning related to (de)centralization map directly onto our previous discussion of government decision-making; and the concepts of management and administrative levels are closely linked to the idea of implementation. In our view, one of the main decisions that a government has to make regarding its rollout programme is whether to centralize control, funding, budgeting and strategic planning for a national rollout within the health ministry, or to devolve such authority to sub-national government or non-governmental organisations. This decision has important implications for how a rollout takes shape, which level of governance will be accountable for its effectiveness, and what the funding requirements will be.

UNAIDS guidelines advocate for a centralized planning approach for AIDS intervention through the 'Three Ones' principles – "one national AIDS authority, one national strategic framework, and one national monitoring and evaluation system" (UNAIDS, 2008:206). The UNAIDS report states that 92% of countries have a national AIDS authority, 97% have a multisectoral framework, and 92% have a national monitoring plan in place (ibid, 2008:206). The concern however is that far fewer countries have detailed costing and operational plans relating to each of these areas despite having the 'Three Ones' principles in place, which they argue has negative implications for the quality of implementation. Although many national strategies place an emphasis on multisectoral responses, in practice very few of these countries have devolved authority and resources beyond the health ministry to other government departments, sub-national government and non-governmental organisations. As a result, sub-national units face tremendous challenges in terms of funding and coordination, especially because donor funding and planning is concentrated at the national government level.

On the other hand, UNAIDS also argues that decentralizing prevention and intervention programmes helps to empower sub-national units at the district and community level to implement programmes that meet local needs. An example of Ethiopia is given where the decentralization of service delivery based on partnerships at the district and community level dramatically increased the number of people receiving HAART from 8276 in 2005, to over 120000 in 2007 (UNAIDS, 2008:209). In the Mbeya region of Tanzania, capacity building and resource mobilization initiatives at the local government level helped the region to reach more than 80% of the population with basic prevention services (ibid, p.209).

²⁰ Original italicized emphasis

What we begin to see is that there is an important link between national strategies and decision-making under the 'Three Ones' principles and translating those plans into well-resourced and coordinated programmes at the sub-national level. Providing HAART is a resource-intensive programme that can require a range of provisions including laboratory and pharmaceutical services, information management and monitoring systems, and counseling and clinic care services (Tawfik et al, 2002:28). We argue that from a bureaucratic and decision-making perspective it is exceedingly difficult for a health ministry to coordinate such a wide range of crucial aspects from a centralized position, and being able to decentralize different functions to local governments and other sub-national units may make a rollout programme easier to carry out. But what functions of government should be decentralized for HAART coverage policy? In terms of the 'Three Ones', central government is perhaps better positioned to handle high-level functions such as negotiating drug prices and procurement, deciding what drug regimes are appropriate in terms of cost and pharmaceutical properties, setting short- and long-term national targets for treatment coverage, developing a system of standardization of service provision, developing guidelines for monitoring and evaluating national progress, sourcing funds from international donors and the private sector, and developing and maintaining national infrastructure such as hospitals and laboratory facilities. These are high-level functions that require oversight from government to the extent that they rely on economies of scale to reduce costs and national coordination to ensure that access is equitable across different areas of the country.

We take the view that allowing sub-national units to decide on how funds received from national level and donors are allocated within their region and which areas may need more than others is critical. They should also have control over localized testing and treatment programmes and authority over which communities and community programmes present the highest demand for treatment. In this way, sub-national units can be more flexible in terms of tailoring their strategy to meet local needs. This is consistent with Treatment 2.0 objective of adapting delivery systems such that further decentralization and integrating of service delivery at a local level is possible; and mobilizing communities and community organisations to assist with implementing and monitoring treatment maintenance and adherence programs at a sub-national level (UNAIDS, 2010:106). In this way, sub-national units are most relevant for implementation and administration of a national rollout programme. They should be empowered to make decisions that affect the rollout in localized areas, but they should also form part of multisectoral decision-making structures at a national level to ensure a uniform overall strategy and standard throughout a country. While national government will hold ultimate accountability for the success or failure of the national rollout, decentralizing certain functions transfers responsibility and accountability (in the case of elected local governments) to sub-national units and reduces the concentration of resources at the national level to ensure that treatment reaches those who need it.

As we mentioned above, both Uganda and Senegal's strategies sought to direct resources to the district level and to decentralize the implementation of HIV/AIDS policy (Putzel, 2003:40). This was done primarily to ensure that health services reached those in need in the most remote district settings.

However, we also noted that the governments in both of these countries found that decentralization could not work in settings where the capacity of sub-national units such as local government was lacking. Wunsch (1998:40) argues that effective local government performance in terms of service delivery is positively related to greater levels of three key factors: resources, authority, and a working, grassroots-based political process. In Europe, there is evidence of decentralized health systems improving the levels of service delivery (e.g. Spain and Italy) on the basis that: decentralization improves allocative and technical efficiency through better matching of public services to local preferences, and fewer levels of localized bureaucracy to facilitate better containment of local costs through targeted programmes (Bankauskaite et al, 2004:22). The evidence in Africa on the other hand suggests that decentralization of service delivery has often failed because many countries that decentralize authority and accountability have done so to militate against the effects of civil war, ethnic conflicts and political instability, rather than to enhance the implementation of government policy - e.g. Egypt, Ethiopia, Burkina Faso, and Uganda (Dessy, 2007:27).

This evidence suggests that while decentralizing decision-making and implementation could have advantages in terms of HIV/AIDS and HAART policy as described in this section, there are intervening political and capacity (resource) factors that may result in less positive outcomes. Our analysis of decentralization in this paper will look at whether a state has a unitary or federal government as a proxy for the degree of sub-national government levels present in a country. The implicit assumption in our exploratory analysis is that countries with different tiers of decentralized government would also tend to use a decentralized framework for implementing a HAART rollout. From the discussion above, we can expect to find that decentralized (non-unitary) governments do not achieve good outcomes in terms of HAART due to political, resource and capacity constraints.

4. STATE CAPACITY AND HAART COVERAGE

State capacity is the ability of the state to formulate and implement public policy (Weller & Ziegler, 2008:7; Hansen et al, 2002:3). To take a narrow view, a country with high state capacity will be better able to effectively implement policy than a less capable country. This is not to say that states with high capacity can implement a whole range of policies perfectly, but rather that they are in a better position to be able to do so than states with lower capacity (Weller & Ziegler, 2008:5). The idea is that states with high capacity have the power to enact policy and they are able to exercise a fair deal of control over the resources to do so in a society. In this light, early conceptions of state capacity actually drew a lot from the idea that a state with a strong military, and control over this military, had a high level of capacity to decide upon and enact policy (Hendrix, 2009:3).

Mann (1993) famously made the distinction between the ‘despotic’ and ‘infrastructural’ powers of the state as components of state capacity. In his construct, despotic power referred to the power that state elites held over society and the range of actions that government could undertake without routine negotiation with civil society (Mann, 1993:59). In other words it is the ability of leaders to act with autonomy, and even against the wishes of the population if necessary to achieve their objectives. Infrastructural power refers to the state as having the institutional abilities to penetrate social life in its territory and implement decisions (ibid, p. 59). In many subsequent works that reference this definition this has been simplified to mean the ability that the state has to extract resources from society for the purpose of implementing policy.²¹The strong state has control over societal life and can extract adequate resources from society to achieve its policy goals. Weak states typically rely on despotic power because they do not have the institutions to impose the administrative structure to extract from society (Hansen et al, 2002:12). Strong (democratic) developed states, for instance, are often associated with strong infrastructural power and weak despotic power in the sense that democratic states have institutional ability but are less able to act autonomously and without political restraint to achieve their goals (Polidano, 2000:808).

If we then view the state as an institution with the autonomy and means to make decisions that affect all of society, then a measure of state capacity represents the extent to which they are able to do this to achieve economic and political goals. In her work analyzing the economic and political crisis which faced countries in Latin America and Africa in the 1970-80s, Merilee Grindle develops the following taxonomy of what capable states *ought* to have:

- i) *Institutional Capacity*: Control over the authoritative and effective ‘rules of the game’ to regulate economic and political interactions, conventions and norms;
- ii) *Technical Capacity*: The ability and human capital to manage information and effective macroeconomic policies;

²¹ See for example Polidano (2000); Hansen (et al, 2002).

- iii) *Administrative Capacity*: The ability to perform basic administrative or bureaucratic tasks essential for managing basic physical and social infrastructure; and
- iv) *Political Capacity*: The effective and legitimate channels for societal decision-making, representation and conflict resolution (Grindle, 1996:8).

For this paper, it is useful to draw some similarities and linkages between state capacity and the political concepts developed in the preceding chapter. We have already stated that regime-type represents the set of political rules and overall societal context for political decision-making and implementation. We can easily relate Grindle’s taxonomy to our discussions of political systems and state capacity, and specifically to resources, political decision-making and implementation in relation to HAART policy. Based on this, a strong state has the autonomy from non-state actors to make decisions about political rules and conventions (e.g. democracy) and how they will interact in order to achieve its goals (institutional and political capacity). The strong state will also have the know-how and the bureaucratic institutions to ensure that those goals are achieved (technical and administrative capacity). In this sense the state formulates and implements policies. Importantly, this definition of state capacity does not make stipulations about the type of regime that is best able to decide upon and implement policy. This can be taken to mean that any country with high levels of capacity could implement its policy objectives, and this is not necessarily dependent on the type of regime.

4.1. HAART and measuring state capacity

As we discussed in Chapter 2, Gizelis and Malotte (2004) show that state capacity has a significant negative impact on HIV incidence and that countries ranking high on either democracy or authoritarianism have a lower rate of incidence, and higher levels of state capacity. Although we need to be cautious when looking at studies of prevention strategies as discussed earlier, this finding suggests that state actors need more than just a ‘strong will’ to achieve positive outcomes in terms of HIV/AIDS policy; they also need the capacity to do so. Hansen (et al, 2002:21) presents that in very poor countries the state “cannot provide adequate health care and public education when fiscal resources are virtually nonexistent”. Andrew Price-Smith and his colleagues make a similar point when they conclude the following:

“States with low endogenous levels of capacity, measured in terms of economic power, infrastructure, and human capital indicators, will theoretically experience far greater difficulty in generating effective adaptive countermeasures to the HIV/AIDS epidemic” (Price-Smith et al, 2004:150).

In each of these references to capacity, the resources that the state is able to control are central to its ability to enact policy – this is particularly the case for AIDS policy. With regards to HAART, Natrass (2008b:9) describes how governments have a role to play in a range of areas such as negotiating for

lower drug costs, bolstering laboratory capacity, streamlining drug distribution channels, ensuring that there is trained health personnel and designing the overall rollout programme. It is evident that performing these tasks requires government to have the wherewithal and decisive authority to make things happen.

From a pragmatic point of view, a government would surely not take the risky decision to embark on an extensive HAART roll-out with the knowledge that it did not have the capacity to do so. A large part of that capacity as we've seen is the actual resources or revenue extracted from society. In a paper about the determinants of public spending, Dudley and Montmarquette (1992:522) propose that "rational agents will take account of the expected cost of financing public spending in determining their desired levels of government expenditure". Similarly, Berry and Fording (1997:159) analyzing American states found that the level of state economic resources was a critical determinant of policy choices and the behaviour of government elites. It is particularly important in the case of HAART that adequate financial, infrastructural, and human capital resources are available to ensure the sustainability of treatment provision in the long-term, especially as more people gain access to it. A discontinuity in the access to treatment for an HIV-positive patient (caused by state resource constraints) could impact negatively on the effectiveness of further regimens of treatment. An effective HAAART programme requires high levels of adherence and continuity to prevent viral progression, prevent drug resistance from developing, and to ensure reliable viral suppression (Mills et al, 2006:679). It is thus essential that a government is able to follow through on an ARV rollout strategy once it is initiated, particularly in resource-constrained settings.

This raises the discussion of whether state capacity can be measured and how this can be done. As with many concepts in political science, state capacity is an incredibly dynamic concept that has no direct measure. The concept is dynamic because different countries may have strong capacity in different areas such as their bureaucracy or level of infrastructure, and these characteristics are constantly changing over time as countries develop economically. However, there are some indicators that have been developed to approximate the level of capacity that a country has. In this paper we focus on tax revenue as a share of GDP and an index of state capacity.

4.1.1. Tax revenue as a share of GDP

In many applications of state capacity theory, a measure of the level of taxation is used. This approach was originally developed during times of war where tax revenue provided the resources to sustain the war effort and stronger states were those that had developed the systems and institutions to extract the revenue and resources needed from society (Besley & Persson, 2007:2). In contemporary studies taxation is seen as an indirect measure that "is the mirror of the relation between the government and the society" (Fauvelle-Aymar, 1999:391). In this sense, studying taxation is able to reveal aspects of both

the economic and political life of a country. This is because taxation reveals the (despotic) ability of government to extract economic resources from society even if there is societal resistance; and through tax compliance society's acceptance of that state's authority is revealed i.e. legitimacy (Lieberman, 2002:91; Fauvelle-Aymar, 1999; Arbetman-Rabinowitz et al, 2007:4). Many studies have used 'total tax revenue taken as a percentage of GDP' or 'income tax revenue divided by total tax revenue' as measures of state capacity.²²

Weyland (1996) quoted in Weller and Ziegler (2008:7) proposes that "if a state has the capacity to implement policy, this should be visible in the effective collection of taxes". Measuring income tax to proxy for state capacity is advantageous because firstly, collected taxes represent an actual outcome of a state policy (to collect taxes), and income tax is known to be particularly difficult to collect relative to other forms of taxation (Weller & Ziegler, 2008; Lieberman, 2002:99). So essentially if the state performs well in this regard, it serves as an indicator of their ability to implement other complex policies e.g. the rollout of HAART. Of course in addition to this, a large pool of collected tax revenue theoretically increases the resources available to the state to implement policies in general. The challenge with using total and income taxation as measures is that this data is difficult to obtain for underdeveloped countries, where HIV prevalence is generally highest. These narrow taxation measures are also difficult to use in cross-national studies because a few countries in the developing world rely on oil and resource revenue. These countries place very little emphasis on income and property tax and instead draw revenues from exports channels (which are seen to be easier revenue sources to manage bureaucratically). This gives a slightly limited indication of the actual administrative and implementation ability of the state (Lieberman, 2002:98). It is however important to conduct some exploratory analysis of the relationship between tax revenue as a share of GDP and HAART coverage, which is included in the empirical model. We expect to find that higher levels of tax revenue as a share of GDP as a proxy for state capacity will be associated with higher levels of HAART coverage.

4.1.2. *State Capacity Index*

The *state capacity index* developed in Price-Smith (et al, 2004) is briefly described in Chapter 2. In this section we develop our own state capacity index drawing from the statistical technique used in Price-Smith (et al, 2004). Our approach is different from theirs in that we have selected a different set of variables which we see as the best proxies for state capacity; and we will also apply a different set of weights for the variables in our analysis using a different technique to the one used in Price-Smith (et al, 2004) where they applied their own theorized weighting system. Instead of applying our own theorized weights, we will use the factor loadings generated from PCFA as the relevant weights for our variables in the index. This is in order to ensure that our index accurately reflects the significance of each observed variable to components of state capacity as described below. The analysis below is thus our own and draws from the general methodology in the Price-Smith (et al, 2004) paper.

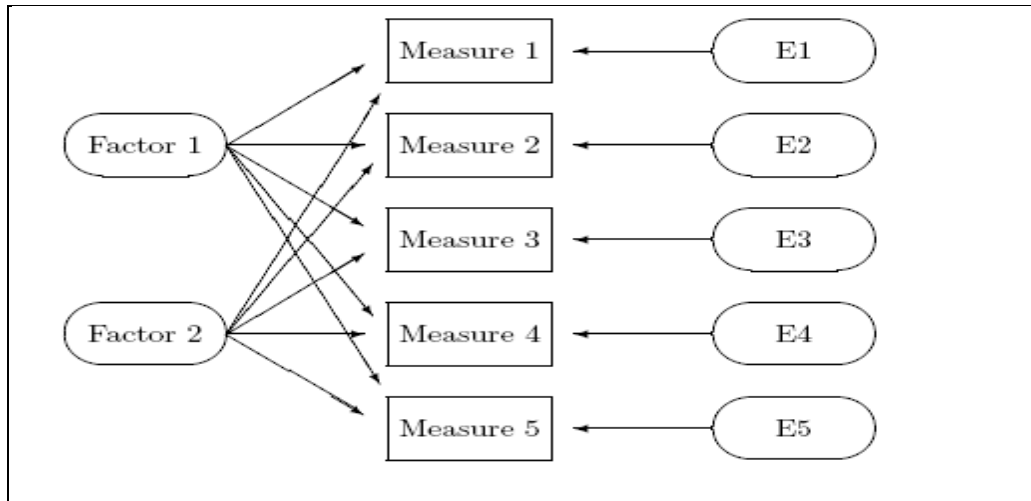
²² For some examples see Lieberman (2002); Fauvelle-Aymar (1999); Weller and Ziegler (2008); Hendrix (2009)

Principal-Component Factor Analysis (PCFA) is used which serves two important purposes in this analysis. The first is that as a variable reduction technique, PCFA can be used to summarize our observed variables and discern which of these variables best proxy for state capacity, based on an adjusted correlation matrix. The second purpose is that PCFA identifies (the number of) latent factors within the data not directly measured that underlie the set of variables i.e. underlying themes or concepts (DeCoster, 1998).²³Figure 4.1 presented below from DeCoster (1998) illustrates the idea that the observed variables (measures 1 to 5) are influenced in part by underlying common factors (factors 1 and 2) and in part by underlying unique factors specific to each observed variable (E1 to E5) (DeCoster, 1998:1), in what is called the Common Factor Model. Factor analysis therefore summarizes underlying patterns and correlations within the set of observed variables into factors that capture those patterns which cannot be measured explicitly.

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²³ See the following for descriptions and discussions of Factor Analysis and its applications: Suhr (2005) compares FA with Principal Component Analysis; StatSoft (2010) for mathematical background and explanations

Figure 4.1. The Common Factor Model



Source: DeCoster (1998:1)

By hypothesizing the underlying concepts between the different proxies for state capacity, PCFA clarifies which of the variables we select are the best proxies for state capacity and whether there are commonalities (latent factors) amongst these variables. The underlying concepts or themes within the variables are represented as factors. The observed variables are linear combinations of these underlying factors and some unique factors (including some measurement error in the observed variables). These underlying factors can then be converted into factor scores that are often used as variables in other analyses for instance – this can be done based on a theorized weighting system such as in Price-Smith (et al, 2004) where they used their own hypothesized weights or weights based on factor loadings as we will do for our index. This is why PCFA is a popular method in the construction of indices and the analysis of questionnaire survey data. As mentioned, we use a different set of variables to those used in Price-Smith (et al, 2004).

An important precondition for performing PCFA is that the observed variables are first standardized using Z-scores such that they have a mean of 0 and a standard deviation of 1. This transformation eliminates the influence of variables with large magnitudes over those with smaller magnitudes.²⁴The 11 variables we include are presented below in Table 4.1 along with the results from the factor analysis. All variables are sourced from the World Bank WDI using the most recently available data over the period 1999-2008, unless otherwise stated. The variables have been chosen as general markers of the capacity of the state to respond to crisis and to manage and implement policy. In this way they are certainly applicable to our second research question which analyzes the effect of state capacity on HAART coverage.

²⁴ See StatSoft (2010:83) for the mathematical derivation and explanation of Z-scores

Table 4.1. State Capacity Index Variable Descriptions²⁵

Variable	Capacity Index Description
<i>Government effectiveness</i> ²⁶	Competence of the state bureaucracy and quality of the public service
Secondary school enrolment (% of gross) ²⁷	Represents education as a core function of a capable state and a measure of human capital
Telephone lines per 100 people	Proxy for the communication, infrastructural and technological sophistication of the state
<i>Sustainable access to improved water source (% of population)</i> ²⁸	Represents infrastructural capacity and level of development (also essential for public health)
Physicians per 1000 people ²⁹	Represents the general level of health care infrastructure and human capital capacity
<i>Nurses per 1000 people</i> ³⁰	Represents the general level of health care infrastructure and human capital capacity
<i>Hospital beds per 1000 people</i> ³¹	Represents the physical health sector infrastructure capacity
Roads paved (% of total roads) ³²	Proxy for transport and physical state infrastructure
GDP per capita in constant 2000 US\$	Level of economic development and overall economic capacity
<i>Tax revenue as a % of GDP</i> ³³	Indicates state extractive and administrative power and level of resources available for government spending; broad indicator of overall state capacity
Military expenditure as a % of GDP	Indicates state ability to protect territory and its control over the use of force to achieve its objectives (despotic power)

The results of the PCFA are presented in Table 4.2:

²⁵ Variables different from those in Price-Smith (et al, 2004) are italicized

²⁶ Kaufmann et al (2009); Quality of Governance Dataset (Teorell (et al, 2010))

²⁷ Additional data is sourced from UNESCO and UNICEF; Available online: www.childinfo.org/

²⁸ Measures share of the population with sustainable access to an improved water source (%)

²⁹ WHO World Health Statistics 2009. Most recently available data for the period 2000-2009. Available online: <http://www.who.int/whosis/whostat/2009/en/index.html>

³⁰ WHO World Health Statistics 2009. Most recently available data the period 2000-2009. Available online: <http://www.who.int/whosis/whostat/2009/en/index.html>

³¹ Sourced from WHO; Available online: www.who.int/nha/en

³² Sourced from WDI Online; Most recently available data for the period 1999-2007

³³ Sourced from the WDI Online and IMF Article IV Country Reports; Available online: www.imf.org

Table 4.2. Principal-Component Factor Analysis using Markers of State Capacity³⁴

Factor	Eigenvalue	% of Variance Explained	Cumulative % of Variance Explained
Factor 1	5.70	51.8	51.8
Factor 2	1.41	12.8	64.6
Factor 3	1.05	9.6	74.3
Factor 4	0.89	8.1	82.3
Factor 5	0.54	4.9	87.3
Factor 6	0.39	3.5	90.8
Factor 7	0.30	2.7	93.5
Factor 8	0.24	2.2	95.6
Factor 9	0.20	1.8	97.4
Factor 10	0.16	1.4	98.8
Factor 11	0.13	1.2	100.0

As mentioned above, each factor represents an underlying concept (or pattern) within the observed variables that we have chosen as the best proxies for state capacity. The factors together are the components of state capacity. Eigenvalues indicate the amount of variance explained by each factor or in other words the number of variables represented by each factor. The Eigenvalue-One Criterion requires that only those factors that have an eigenvalue equal to or greater than 1 are retained, in this case factor 1, 2 and 3. An eigenvalue of 5.70 on factor 1 basically means that the factor represents as much of the variance as 5.70 of the 11 original variables. Similarly, factors 2 and 3 represent as much variance as just over 1 of the variables and the remaining factors only account for as much as a fraction of a variable which is why they are ignored. It can be said that together the three retained factors (1, 2 and 3) represent as much of the variance as just over 8 of the 11 observed variables in our analysis.

The last two columns in Table 4.2 indicate the amount of variance explained by each factor, and the cumulative value of underlying variance explained by the factors. Factor 1 represents 51.8% of the total variance in our variables, factor 2 accounts for 12.8% and so forth. Additively our three retained factors explain 74.3% of the variance in our data together, which is considered fairly strong. Importantly for our analysis, this means that retaining only factors 1, 2 and 3 and the variables that they 'represent' will not cause a substantial loss in explanatory power.

In columns 2 to 4 of Table 4.3 below, the rotated factor loadings of the variables are presented i.e. a variable is said to load on a factor if it is highly correlated with that underlying factor or concept (Suhr, 2005:1). Load values (which can also be referred to as coefficients) that are close to 1 or -1 indicate a close relation between the variable and that factor (Price-Smith et al, 2004:158). We have generated a 'rotated' solution to obtain a clearer impression of which variables load uniquely onto the different factors and to eliminate the correlation between the different factors. This method involves taking a

³⁴ Figures rounded-off

linear transformation of each of the factors to obtain a clearer picture of the relevance of each variable in that factor.³⁵ In Stata 11.0 Econometric Software the default rotation using the ‘Varimax’ technique produces orthogonal factors which means that correlations between the factors are eliminated. In this paper an orthogonal rotation is used to eliminate correlations between the three factors and isolate the contribution of each variable to each factor more accurately without changing the fundamental relationship between each observed variable and the respective factors. Rotated factor loadings can be interpreted as standardized regression coefficients that regress each factor on the observed variables. These coefficients are therefore the weights that we will assign to each observed variable in relation to the three factors as we will describe below.

With reference to the Common Factor Model in Figure 4.1, uniqueness is related to the unique factors that underlie each of the observed variables, E1 to E5. The uniqueness of each variable presented in the last column of Table 4.3 is simply the variance within that variable that is unique to it and not shared with the other variables. So for example, the variable for military expenditure with a uniqueness of 43.1% captures a different aspect of state capacity to the other variables, and is the most unique of our observed variables.

Table 4.3. Rotated Factor Loadings

Variable	Factor 1	Factor 2	Factor 3	Uniqueness %
Government effectiveness	0.180	0.842	0.179	22.7
Secondary school enrolment	0.692	0.572	0.112	18.2
Telephone lines per 100 people	0.730	0.501	-0.025	21.6
Sustainable access to water	0.563	0.598	0.178	29.4
Physicians per 1000 people	0.885	0.229	0.029	16.3
Nurses per 1000 people	0.846	0.183	0.049	24.8
Hospital beds per 1000 people	0.885	0.092	0.009	20.9
Roads paved (% of total roads)	0.753	0.135	0.023	41.5
GDP per capita	0.339	0.807	-0.005	23.4
Tax revenue as a % of GDP	-0.020	0.197	0.865	21.2
Military expenditure	0.201	-0.509	0.520	43.1

A factor loading is generally considered ‘large’ if it exceeds 0.4.³⁶ In the table of factor loadings it is evident that school enrolment, telephone lines, sustainable access to water, physicians per 1000, nurses per 1000, hospital beds per 1000, and the percentage of roads paved all load very well onto factor 1. We can therefore name this underlying factor the ‘State Infrastructure’ factor because we have defined each of these variables as a proxy for health care sector and overall state infrastructural capacity. Government effectiveness and GDP per capita are the most significant for factor 2, followed by school

³⁵ In Stata 11.0 Econometric Software the default rotation using the ‘Varimax’ technique produces orthogonal factors which means that correlations between the different factors are minimized

³⁶ Available online: <http://support.sas.com/publishing/pubcat/chaps/55129.pdf> (p. 29)

enrolment, telephone lines, and sustainable access to water. These variables generally relate to overall economic development and the quality of public service (government effectiveness measures the quality of public service delivery overall; education, communication infrastructure and access to water are important public services closely related to economic development). We can therefore loosely name this factor the 'Economic Development' factor. Military expenditure and tax revenue collection load well onto factor 3. From earlier discussions in this Chapter we know that both of these aspects relate to how well a state is able to control societal behaviour – states with a strong ability to reach into society and extract resources and those with the military power to assert control in their territory have high levels of despotic power or state autonomy. We can therefore name this factor the 'State Autonomy' factor.

These factor loadings or standardized coefficients represent the weights in our analysis. Instead of defining our own weighting system, we use Stata 11.0 to estimate the predicted values from the coefficients for each of the countries in our analysis on each factor (factor scores), using a simple regression. In this way each country will have its own predicted factor score for each of our three factors (state infrastructure, economic development, and state autonomy). To derive our final state capacity index from the component factors we simply add the scores that each country obtained for each of the three factors related to state capacity to get a single state capacity score for each country.

To simplify the index for subsequent analysis, all of the values are rescaled to range between 0 and 1, with 1 being the country with the highest capacity in the sample. Due to data limitations the index is unfortunately only calculated for 82 of the 108 countries in our sample for which HAART coverage data is available – we only calculate the index for countries where data is available for each of our eleven observed variables. The mean value for the index in the sample of countries is 0.479 and the standard deviation is 0.278. Table 4.3 below presents the State Capacity Index scores and HAART coverage for the 82 countries included.

Table 4.3. State Capacity Index (SCI) scores and HAART coverage 2009 (%)

<i>Country</i>	<i>2009 HAART Cov</i>	<i>SCI</i>	<i>Country</i>	<i>2009 HAART Cov</i>	<i>SCI</i>
Algeria	42	0.94	Lesotho	68	0.94
Angola	35	0.47	Madagascar	4	0.03
Armenia	39	0.70	Malawi	64	0.27
Azerbaijan	36	0.69	Mali	65	0.14
Bangladesh	40	0.13	Mauritania	41	0.14
Belarus	48	0.84	Mauritius	38	0.73
Belize	57	0.59	Mexico	71	0.55
Benin	72	0.25	Mongolia	15	0.52
Bolivia	28	0.38	Morocco	42	0.63
Botswana	95	0.97	Mozambique	45	0.13
Bulgaria	38	0.85	Namibia	95	0.73
Burkina Faso	60	0.17	Nepal	17	0.25
Burundi	27	0.22	Nicaragua	62	0.32
Cambodia	95	0.05	Niger	33	0.00
Chad	53	0.12	Pakistan	6	0.31
Chile	81	0.89	Panama	53	0.48
Colombia	26	0.59	Paraguay	57	0.31
Congo	33	0.02	Peru	57	0.44
Costa Rica	86	0.62	Philippines	60	0.46
Côte d'Ivoire	39	0.18	Poland	26	0.86
Croatia	95	0.92	Moldova	28	0.61
Dominican Rep.	64	0.47	Romania	95	0.61
Ecuador	45	0.65	Rwanda	95	0.21
Egypt	19	0.58	Senegal	72	0.32
El Salvador	66	0.42	Sierra Leone	29	0.03
Fiji	52	0.35	Slovakia	78	0.81
Gabon	66	0.48	South Africa	56	0.81
Gambia	28	0.26	Sri Lanka	33	0.54
Georgia	95	1.00	Sudan	8	0.06
Ghana	36	0.46	Swaziland	85	0.68
Guinea-Bissau	46	0.29	Thailand	76	0.57
Honduras	47	0.37	Togo	42	0.14
Hungary	35	0.93	Tunisia	79	0.69
Iran	7	0.43	Turkey	90	0.71
Jamaica	67	0.71	Uganda	53	0.23
Kazakhstan	46	0.60	Ukraine	16	0.73
Kenya	65	0.30	Tanzania	44	0.11
Kyrgyzstan	22	0.60	Uruguay	67	0.84
Laos	95	0.05	Viet Nam	45	0.63
Latvia	21	0.82	Zambia	85	0.25
Lebanon	29	0.72	Zimbabwe	49	0.34

5. EMPIRICAL MODEL AND METHODOLOGY

This chapter describes our data and the empirical model that we will apply. Our dependent variable is the natural log transformation of UNAIDS HAART coverage estimates for 2006 and 2009.³⁷ UNAIDS HAART data for both these years is available for 108 countries. We will only test our main regression using the 2006 data to see whether there has been any significant change in the determinants of HAART coverage over time. An Ordinary Least Squares (OLS) approach with robust standard errors is used to adjust for heteroscedasticity in our cross-sectional, cross-country model. Building on work by Nattrass (2008) and Schwardmann (2008), only those AIDS affected countries with adult HIV prevalence rates of at least 0.1% are assessed. The model will take the following generalized functional form:

$$\ln(\text{HAART Coverage}) = \beta_0 + \beta_1 * (\text{Log of Adult Prevalence}) + \beta_2 * (\text{Urban Population}) + \beta_3 * (\text{Health/Govt. Expenditure}) + \beta_4 * (\text{Donor Disbursements}) + \beta_5 * (\text{Log of GDP per capita}) + \beta_i * X_i + e$$

5.1. *Independent Variables*

5.1.1. *Epidemiological*

The first important factors to control for are the varying characteristics of the epidemic in each country. Specifically, UNAIDS *adult HIV prevalence* (ages 15-49) for 2006 and 2009 is included as an indicator of the magnitude of the threat that HIV poses in a given country.³⁸ Theoretically the levels of antiretroviral drug coverage should be substantially higher in countries where HIV prevalence is high. This is mainly because in the absence of a vaccine for HIV, HAART is considered an essential alternative for prolonging life and increasing the quality of life of people living with HIV/AIDS and it thus forms a crucial part of a country response strategy. As such, governments (and non-governmental entities) in severely affected countries are expected to respond more aggressively to the epidemic.³⁹ We note however, that in countries with high HIV prevalence it may be more difficult to respond to the epidemic as providing treatment to a larger number of people has resource implications. It is thus important to also control for the level of domestic and international funding available.

³⁷ The log transformation of this data is useful for suppressing the bias caused by outliers in the data, as well as allowing the coefficients of explanatory variables to be interpreted as elasticities which are particularly useful for analyzing changes in HAART coverage in response to small changes in the determinants

³⁸ In the actual analysis the natural log of this variable is used to account for significant outliers

³⁹ Schwardmann (2008:9) argues that this could also be in response to greater pressure from civil society in severely affected countries where HIV/AIDS is likely to be more in the 'spotlight' as a political issue

5.1.2. *Financial and Economic*

We noted in Chapter 1 that domestic funding of AIDS programmes and international donor aids were the most important determinants of HAART coverage. To account for the significant impact that economic considerations have on HAART provision, we include three variables that address specific aspects of funding and economic development.

The first of these is a measure of *public health-specific expenditure as a share of total government expenditure*. This variable is sourced from the World Bank World Development Indicators dataset for 2006 and 2007 (unfortunately this is the most recent data available to analyze HAART coverage for 2009). This measure provides a good indication of the extent to which government prioritizes expenditure on health in general in relation to other demands on the budget. While this figure includes but is not specific to AIDS, it does reflect expenditure on improving the quality of clinics and the availability of skilled health personnel which are essential to the provision of HAART in general. This amount typically includes the expenditure on drug therapy by government which constitutes the most expensive portion of the cost of providing HAART across countries.⁴⁰ We can expect that governments in countries significantly affected by HIV/AIDS would commit more funds to AIDS response strategies and improving health sector capacity in general. However in the presence of other competing health crises (e.g. malaria) or developmental objectives such as social welfare and education, there is an opportunity cost to prioritizing health care expenditure on treatment which may mean lower HAART coverage outcomes.

A second economic variable included is the *aid disbursements for HIV/AIDS control divided by the HIV positive population* in a country. This data is sourced from the OECD Creditor Reporting System (CRS). It reflects the average aid disbursements by OECD countries, multilateral organisations such as the Global Fund and other international donor organisations over the period 2006-8 in US\$ millions.⁴¹ HIV population data is sourced from UNAIDS for 2007. The data from the OECD has the advantage of reflecting the combined disbursements from a wide array of global sources. We include the commitments per HIV positive person in the population in order to account for the aid availed by the international community in relation to the need in AIDS-affected countries.

Thirdly, we must account for the overall levels of economic development and income levels of individuals in the sample of countries. Populations and governments in poor countries tend to face a wide array of concomitant developmental problems and their ability as a society to respond to crises of

⁴⁰ See Nattrass (December, 2008) for a detailed perspective on the direct costs of ARV rollouts and the role that national government policy and leadership plays in extending coverage

⁴¹ Alongside OECD countries, donors captured in the data include the AfDF, Global Fund, EC, UNICEF, UNDP, and UNAIDS amongst others. Available online: www.oecd.org/dac/stats/idsonline

which AIDS is only one is severely constrained by their general resource limitations. Higher levels of income per capita theoretically affect HAART coverage positively as more people in need of treatment can afford it out-of-pocket. At the same time, as an indicator of the overall levels of economic development in a country, it can be expected that a wealthier country (individuals and government), other things being equal, can 'afford' a more extensive HAART rollout. To this end the *log of GDP per capita in 2006 and 2009 at constant 2000 US\$ valuation* is included, as sourced from the World Bank WDI. In combination the variables for GDP per capita, government health expenditure and international aid provide a comprehensive picture of the financial context surrounding AIDS response policy in a given country. We expect that higher levels of funding and economic development result in higher HAART coverage.

5.1.3. Political system factors

Our discussion in Chapter 3 outlined the arguments pertaining to how political systems work to enable higher HAART coverage outcomes. We presented the view that an analysis of political factors as determinants of HAART coverage needs to focus on how decisions are made and how they are implemented to ensure an effective rollout. We therefore delineated a limited set of factors that we consider as relevant to the discussion of political systems, decision-making and implementation, namely: political regime, cultural fractionalization and government centralization.

Our discussion on political regime-types looked at the potential strengths and shortfalls of democratic regimes in providing HAART. We also discussed why authoritarian governments which tend to place less emphasis on human rights are less likely than democracies to emphasize a non-discriminatory environment in which people are free to come forward for testing, treatment and care. This view suggested that the levels of HAART coverage are expectedly lower in authoritarian countries, although there are some examples of authoritarian states that have achieved a great deal in terms of combating HIV/AIDS. In our earlier discussion we also described the *Polity IV indicator of regime-type* which is a 21-point scale ranging from '-10' for autocracies to '+10' for democracies. We apply this measure in our analysis because we find it is a more comprehensive rating of different political regimes than a simple dummy variable for whether a country is a democracy or not. We will use 2006 and 2008 as 2008 is the most recently available data for this variable. We expect to find that democracies on the whole, tend to produce higher levels of HAART coverage.

By taking the square of the Polity IV indicator, we are also able to test whether there is a potential non-linear relationship between HAART coverage and regime-type as discussed in Chapter 3. This relationship may exist on the basis that authoritarian governments typically have high levels of state autonomy and can act aggressively to combat HIV/AIDS if they view it as a threat to economic

development. We therefore create an additional variable which is the square of the Polity IV variable to test this hypothesis.

The second political institution variable that we include is Fearon's (2003) measure of *cultural fractionalization/diversity* taken from the Quality of Governance (QoG) Dataset for the year 2006. Unfortunately this measure reflects a constant figure for each country from 2006 to 2009 so we use the same values for our 2006 and 2009 HAART regressions. This measure reflects the probability that two randomly chosen people from a given country will not belong to the same ethnic group and also adjusts for cultural differences as delineated by the 'structural distance' between the languages of different groups (Teorell et al, 2010:91). A higher value indicates a more fractionalized society. Using an example, in countries that have many different ethnic groups, and where the languages used between each of these groups are fundamentally different from each other, the score for cultural diversity is higher. In his analysis of different measures of societal boundaries and their application to AIDS policy, Lieberman (2009:245) explains that "the greater the distance between the languages of people from two different groups, the greater the degree to which people might imagine the boundaries between them". In this way the combination of ethnic and linguistic differences represents a significant part of the differences in culture.⁴² He finds that Fearon's measure of cultural fractionalization is more comprehensive than other similar measures because of its wide geographical coverage and the explicit emphasis on the social and political significance of cultural boundaries.⁴³ We can thus expect that in countries where there are strong ethnic and linguistic distinctions between groups, HIV/AIDS stigma and fear of association with the disease will most likely result in lower HAART coverage.

Our last political institution variable is a dummy *variable for government centralization* for 2004 from the QOG dataset and originally extracted from Pippa Norris data (Teorell et al, 2010:138). This variable classifies each state as either 0 for non-unitary, or 1 for unitary. We use this variable to indicate whether a country has a unitary (or centralized) structure of government, or one with devolved powers and authority (decentralized). While this is not an ideal measure in that it gives no indication as to the extent to which political authority and accountability for revenue collection or decision-making are devolved to sub-national levels of government, it provides some guidance as to whether a country does have some form of decentralized political system. Our interpretation of the results using this indicator will also consider the fact that a country with a non-unitary government may not necessarily run their HAART programme in a decentralized structure owing to limited capacity in sub-national units or preference for a centralized rollout programme in which central government holds all decision-making authority. From

⁴² Of course there are other factors that also influence 'culture', such as religion

⁴³ Lieberman (2009) creates his own indicator called the Ethnic Boundary Index for 85 countries. He classifies countries on the number of boundaries as well as the institutionalization of those boundaries i.e. "the degree to which ethnic categories formally and informally structure social and political interactions in the polity" (Lieberman, 2009:247). We do not include this indicator in the analysis as it significantly reduces the number of observations

our earlier discussions, we can expect to find that decentralized (non-unitary) governments do not achieve good outcomes in terms of HAART due to political, resource and capacity constraints.

5.1.4. *Indicators of state capacity*

Our research question asks whether countries with higher levels of state capacity as measured by tax revenue as a share of GDP or an index of state capacity tend to have higher levels of HAART coverage. In Chapter 4 state capacity was defined as the endogenous ability of the state to formulate and implement public policy. We argued that it was important for a country to have adequate levels of capacity in terms of bureaucratic, infrastructure and human resources, but also in terms of despotic power to make decisions and extract resources from society to achieve policy objectives. A state with low levels of capacity will experience far greater difficulty in implementing an effective HAART programme than a state with greater endogenous capacity. We expect that HAART coverage will thus be higher in countries with high levels of capacity. We present two different measures that are used in the literature to measure state capacity: Tax Revenue as a share of GDP, and the State Capacity Index adapted from Price-Smith (2004).

Tax revenue as a share of GDP is one of the simplest available indicators of state capacity. A state that is able to effectively extract tax revenue from society is considered to have a good state capacity and this serves as a good indicator of their ability to implement policy in general. A country with higher tax revenue to GDP should be better able to implement an effective HAART rollout and will thus demonstrate higher levels of HAART coverage. This is also because a higher level of tax revenue provides government with more funds to implement a rollout programme. While a more specific measure of taxation ability such as ‘income tax as a share of total taxes’ has been shown to be more reflective of the endogenous capabilities of the state, it is difficult to compile due to data availability constraints. A concern with using tax data is the comparability of data across countries due to different tax policies and structures. To account for this, data sources are limited to those that apply the same general definition for what counts as tax revenue. We use taxation data from the World Bank WDI and the International Monetary Fund Article IV Country Reports.⁴⁴ The data is for the year 2008 and where data is missing, figures have been sourced from the most recent available WDI data covering the years 2005 to 2008.

Our *state capacity index* is described in detail in the previous chapter. We have developed this index drawing from methodology applied in Price-Smith (et al, 2004), but adapting the index using our own set of observed variables and a completely different method for weighting different variables. With

⁴⁴ The World Bank and IMF definition used: Tax revenue refers to compulsory transfers to the central government for public purposes. Certain compulsory transfers such as fines, penalties, and most social security contributions are excluded. Refunds and corrections of erroneously collected tax revenue are treated as negative revenue (WDI Online)

reference to our research question, we expect to find that a country with high levels of state capacity as measured by the index is likely to achieve higher levels of HAART coverage.

University of Cape Town

6. RESULTS AND DISCUSSION

In this chapter we present the results from our regression analysis on the determinants of HAART coverage and discuss our findings. We first present the analysis for HAART coverage in 2009 and then run our main model including the state capacity index for the 2006 data to see whether the determinants of HAART coverage have changed significantly over this period.

Regression 1 in Table 6.1 includes the core variables of the model, controlling for both the epidemiological and economic variables with the log of HAART coverage in 2009 as the outcome variable. Our independent variables here are adult HIV prevalence (log), public health expenditure as a share of total government expenditure, donor fund disbursements per HIV-positive person in the population, and GDP per capita (log). Together these variables explain 26.1% of the variance in cross-country HAART coverage. Observations are limited to 81 mainly because of the incomplete data available on aid disbursements. As expected, the log of adult HIV prevalence is statistically significant with a positive coefficient. This confirms that in countries where HIV prevalence is relatively high, the level of HAART coverage will tend to be higher (than in less affected countries) in response to a larger threat posed by HIV to society. In Chapter 5 we suggested that it would be more difficult for countries with high HIV prevalence to achieve better levels of treatment coverage however the significance of the donor fund disbursement and GDP per capita variables suggest that with high levels of funding and economic development, this effect is less likely. The donor funding variable is statistically significant at the 5% level with a positive coefficient such that for every 10% increase in donor disbursements, HAART coverage increases by 1.3%. The GDP per capita variable is significant at the 1% level such that for a 10% increase in per capita income, HAART coverage increases by 2.3%. What is most interesting in regression 1 is that the government health expenditure variable is not significant. This contradicts our earlier argument that funding from domestic governments was critical for providing access to HAART. This effect may be caused by the fact that we are only using 2007 health expenditure data which may be less relevant for 2009. It may also be that funding from external sources is specifically targeted for HIV/AIDS intervention whereas the health budget is shared with other critical health concerns such as malaria in some countries, thus limiting the funding available for treatment interventions.

Regression 2 includes our three political institution variables – Polity IV regime-type, cultural fractionalization, and government centralization. Of these, only the centralization variable (where 1 = unitary government) is statistically significant at the 10% level with a positive coefficient. The positive coefficient tells us that as we expected, centralized or unitary governments are most likely to produce better HAART coverage policy outcomes. This is consistent with the UNAIDS ‘Three Ones’ principles where there is a single national framework and authority that oversees the national intervention programme. This finding also supports the argument we presented earlier that decentralization of treatment provision by government would depend on there being sufficient capacity in sub-national units to implement an effective rollout. Both the Polity IV regime-type variable and the measure of

cultural diversity are not significant, but have the expected directional effects – the Polity IV variable has a positive sign suggesting that countries with higher scores on the 21-point scale (democracies) tend to have higher levels of HAART coverage; and the negative sign on the cultural fractionalization variable is consistent with the view that high levels of politically salient fractionalization lead to lower HAART coverage outcomes. Including the three political institution variables improved the explanatory power of the model significantly with an R^2 of 37%.

University of Cape Town

Table 6.1. The determinants of HAART coverage 2006 and 2009

The Determinants of HAART Coverage (2006 & 2009)						
ALL Countries						
Regression:	1	2	3	4	5	6
Dependent Variable: Log of HAART Coverage (2009)						Log of HAART 2006
Independent Variables:						
Adult HIV Prevalence 2009 (log)	0.182*** <i>0.045</i>	0.192*** <i>0.045</i>	0.165*** <i>0.044</i>	0.187*** <i>0.045</i>	0.165*** <i>0.047</i>	0.102 <i>0.067</i>
Health to Govt Expend (%)	0.018 <i>0.016</i>	0.004 <i>0.017</i>	0.024 <i>0.018</i>	0.011 <i>0.017</i>	0.026 <i>0.016</i>	0.081*** <i>0.023</i>
Disbursement/HIV+ (log)	0.140** <i>0.057</i>	0.103 <i>0.063</i>	0.154** <i>0.069</i>	0.143* <i>0.072</i>	0.089 <i>0.086</i>	0.132 <i>0.097</i>
GDP per capita 2009 (log)	0.235*** <i>0.057</i>	0.241*** <i>0.070</i>	0.206*** <i>0.059</i>	0.230*** <i>0.069</i>		
Polity IV Regime Type		0.008 <i>0.012</i>		0.009 <i>0.012</i>	0.004 <i>0.012</i>	-0.010 <i>0.018</i>
Cultural Fractionalization		-0.419 <i>0.330</i>		-0.408 <i>0.351</i>	-0.363 <i>0.426</i>	-0.508 <i>0.632</i>
Centralization (1=unitary)		0.396* <i>0.225</i>		0.490* <i>0.251</i>	0.592** <i>0.293</i>	0.546 <i>0.356</i>
Tax Revenue/GDP			0.010* <i>0.006</i>	0.003 <i>0.006</i>		
State Capacity Index (SCI)					0.698* <i>0.360</i>	1.117** <i>0.473</i>
Constant	1.224** <i>0.573</i>	1.339* <i>0.741</i>	1.093* <i>0.625</i>	0.977 <i>0.773</i>	2.336*** <i>0.590</i>	0.763 <i>0.796</i>
Observations	81	77	76	72	65	64
R ²	0.261	0.372	0.285	0.400	0.380	0.380
F-Statistic	6.51	5.91	5.31	5.11	5.17	7.71
Coefficients are marked *, **, *** for significance @ the 10%, 5%, & 1% level respectively Robust Standard Errors in <i>italics</i> below coefficients						

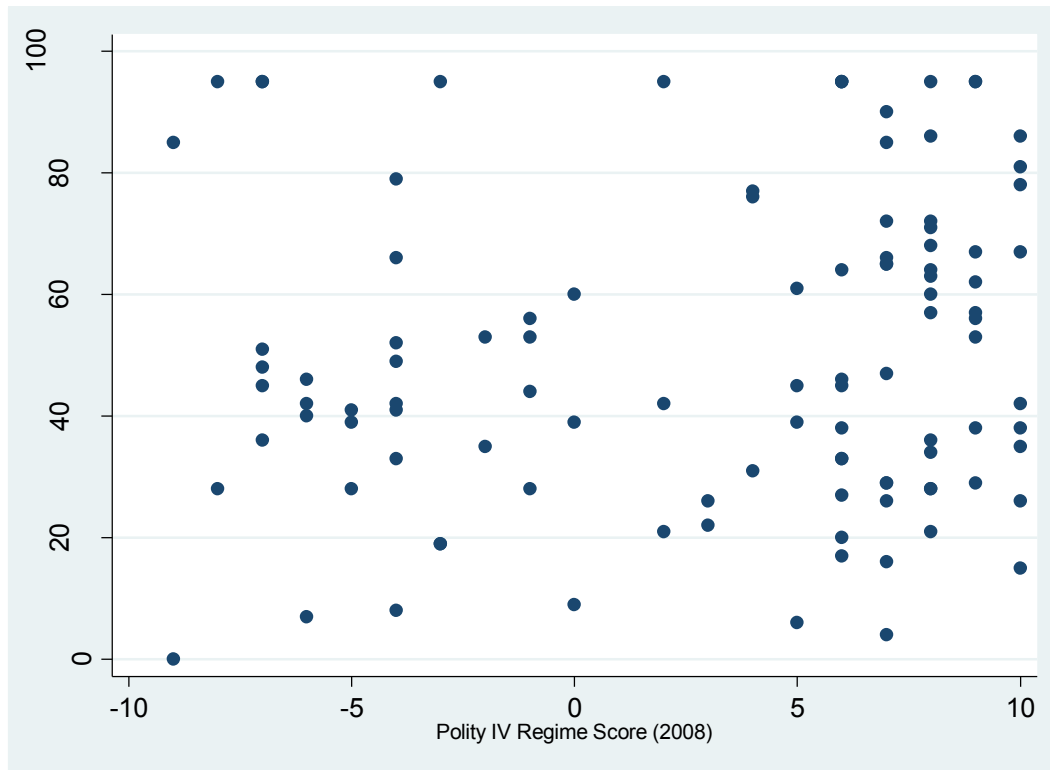
To test whether there may be a non-linear (quadratic) statistical relationship between HAART coverage and regime-type we include the square of the Polity IV variable in a separate regression. Table 6.2 below reflects this result.

Table 6.2. Regression of HAART Coverage (log), Polity IV Regime Score, and the Polity IV Score Squared

Variable	Coefficient	S.E.	p-value
Polity IV Regime	-0.006	0.012	0.619
Polity IV Score Squared	0.005	0.002	0.041
Constant	3.556	0.118	0.000
Model R ² = 4.1%; Prob. > F = 0.085; No. of Observations = 104			

We see in the table that there is evidence to suggest a non-linear relationship between HAART coverage and regime-type. The coefficient for the squared term is positive and it finds significance at the 5% level. The original variable is not significant and has a weak negative coefficient. While we should not read too much into this finding because we do not control for other factors, it provides some evidence that authoritarian governments are also able to achieve high HAART coverage outcomes. Figure 6.1 below plots HAART coverage on the vertical axis and the Polity IV scale (not squared) on the horizontal axis. The figure shows that there are two groupings of countries with HAART coverage of above 40% - this occurs at Polity IV scores of below '-5' (autocracies) and those above '+5' (democracies). Indeed, average HAART coverage in countries that rate above '+5' on the Polity IV scale is 52.6% while it is 48.3% for countries that rate below '-5', which is a marginal difference. This relationship seems to be fairly weak from what we see on the scatter plot but it suggests that there is some merit in the argument that authoritarian governments are able to attain levels of HAART coverage that are similar to those in more democratic countries. This result does not hold when we include both the Polity IV variable and its square in the full model controlling for epidemiological and economic variables which suggests that this finding is not robust (we do not include this regression in Table 6.1).

Figure 6.1. Scatter plot of HAART coverage and Polity IV regime-type



Regression 3 introduces our first measure of state capacity to the main model – tax revenue as a share of GDP for 2008. We find that this measure has a positive and significant coefficient in the regression specification excluding the political institution variables. There is therefore evidence that countries with high levels of state capacity, for which tax revenue as a share of GDP is a proxy, tend to achieve higher levels of HAART coverage. We mentioned in Chapter 4 that the tax revenue variable picks up two effects – as a proxy for state capacity it indicates the domestic government’s ability and autonomy to implement policy overall (despotic and infrastructural power), but also the actual revenue that the government is able to extract to finance government expenditure. The fact that the health expenditure variable is not significant in the model may thus mean that the variable is picking up more of the former effect and not the revenue aspect – however, we cannot confirm this directly from our model.

When we include the political institution variables in regression 4 with the tax revenue variable, we find that the tax revenue variable is no longer statistically significant in the model. We believe that there may be two possible reasons for this. The first is that as we saw in Table 2.1, Natrass (2006 & 2008a) and Schwardmann (2008) found that democracies were most likely to achieve better HAART policy outcomes partly because they were likely to have better functioning administrations. Hanson (2008) assesses the impact of state capacity and democracy on health and education policy outcomes. He measures state

capacity using data on the historical roots of states arguing that “state capacity should be strongly correlated with the depth of the state’s historical roots”; and the quality of state bureaucracies because an institutionally and administratively capable state should achieve better policy outcomes (Hanson, 2008:5). With regard to health policy outcomes as measured by infant mortality, rates of immunization and life expectancy his results were interesting. He found that although democracy and state capacity had positive impacts on these public policy outcomes respectively, there was no evidence that democracy and state capacity measures acted in a complementary way to produce better outcomes (Hanson, 2008:13). He finds some evidence that the two effects may in fact be substituting for one another in his model. The relevance of this for our analysis is that introducing both the Polity IV regime variable and the tax revenue measure in the model actually introduces a substitution effect between the two variables as Hanson describes which dilutes the effect of the tax revenue variable. Natrass (2008a:5) actually applies the logic that established democracies are likely to have better functioning governments, suggesting that a measure of democracy can actually also reflect the institutional state capacity of the country.

The second reason to explain why the tax revenue variable is not statistically significant when we introduce political institution factors is the possibility of a negative relationship between democracy and tax revenue. We note that the majority of the countries in our sample (56 out of 108) are strong democracies with regime scores of above ‘+6’ based on the guidelines for using the Polity IV indicator (Marshall & Jagger, 2005). Fauvelle-Aymar (1999) studies the cross-country determinants of tax revenue in 86 developing countries and finds that being a democracy consistently relates to lower levels of tax revenue. She finds empirical support for the idea that the electoral constraint in democracies limits the autonomy of government to implement its own preferences, whereas autocratic governments are able to act in a more predatory manner to extract resources from society (ibid, 1999:396). So controlling for political regime-type in regression 4 possibly introduces this interaction between democracy and tax revenue where there are two competing effects involved. The first is that there is evidence in Natrass (2006 & 2008a) and Schwardmann (2008) that democracy relates to higher HAART coverage. Secondly, Fauvelle-Aymar (1999) presents evidence that levels of taxation could be higher in more autocratic countries. If higher levels of taxation are associated with authoritarian states, and higher HAART coverage is associated with democratic principles; then state capacity to extract resources will not lead to better levels of HAART coverage, other things equal. As we discussed in Chapter 3, authoritarian governments may have the necessary capacity, but potentially lack the political incentives, accountability and regard for some human rights to deliver this particular public good in most cases. The combination of these effects may explain the weak outcome for the tax revenue measure when we control for the type of regime in a country.

Table 6.3 below presents the results of a regression of the log of HAART coverage on our state capacity index. The results here show that our index has a positive and statistically significant relationship with HAART coverage as expected. Without controlling for other variables, the measure explains 8.5% of the

variance in HAART coverage and is significant at the 10% level. This is encouraging evidence that a broad measure of a country's infrastructural, institutional, and health sector capacity can be applied to the analysis of the determinants of HAART coverage with good results. The fact that the measure comprises a range of different aspects that are critical to implementing a government policy such as a HAART rollout is important as a principle. It acknowledges the fact that providing treatment effectively requires more than just health care professionals and medical facilities. It also requires a range of different but critical factors specific to each country such as the bureaucratic capacity to ensure effective administration of the rollout programme as well as transport infrastructure to make it possible for people to travel to gain access to treatment facilities as we mentioned before. Indeed, if we look at the three factors that comprise our index which we derived from the PCFA analysis, providing access to treatment is enabled by a combination of state infrastructure, economic development, and state autonomy.

Table 6.3. Regression of HAART Coverage (log) and the State Capacity Index

Variable	Coefficient	S.E.	p-value
State Capacity Index	0.476	0.273	0.085
Constant	3.554	0.169	0.000
Model R ² = 8.51%; Prob. > F = 0.085; No. of Observations = 82			

Regression 5 incorporates the state capacity index in our model in which we include the political institution factors but exclude the GDP per capita variable. GDP per capita is omitted to avoid 'double-counting' the effect of the variable which is also a significant component of the state capacity index. This also applies to the tax revenue variable. The regression results show that the state capacity index is significant at the 10% level. However, due to the fact that not all of the countries in our sample have full data available for the variables that comprise our index, we lose a significant number of observations in the regression and only account for 65 countries. Despite this, we can certainly gain some insight from the results.

The model explains 38% of the variation in cross-country HAART coverage. The only variables that are statistically significant are the HIV prevalence and the centralization dummy variable, both with positive coefficients as we found before. This finding indicates that when we control for endogenous state capacity as measured by the index, countries with a high HIV prevalence are still able to achieve better HAART policy outcomes. The statistical significance of the centralization variable suggests that high HAART coverage outcomes are consistently more likely in countries with unitary governments even when we control for state capacity. This contradicts our argument in Chapter 3 that decentralization of treatment programmes could be effective if sub-national units have adequate levels of capacity with which to implement programmes. A possible explanation is that intervening factors such as ethnic

fractionalization, which we have argued can confound political decision-making processes, could result in unequal distribution of state resources to sub-national levels of government. For instance, in a country with high levels of ethnic fractionalization political leaders at the national government level may be biased towards their own ethnic group and support base in terms of building health care infrastructure and providing budgetary resources to increase access to treatment. Alternatively, in a country where the epidemic is concentrated within a particular ethnic group, a political leader from another grouping may not see it as a priority to direct state resources towards providing treatment to people from that ethnic group. The fact that the donor funding variable loses its significance in this regression suggests that when a government has high levels of institutional and infrastructural capacity, donor funding contributions are perhaps less critical to ensure an effective rollout and domestic governments may rely more on domestic capacity.

In regression 6 we compare our model for HAART coverage in 2009 to the determinants of coverage in 2006. Regression 6 includes our political institution factors and the state capacity index. It is most appropriate to compare the results in regression 6 with regression 5, as they both control for the same set of variables. We note again that the cultural fractionalization and centralization data are unchanged as the fractionalization variable is a country constant, and the government centralization indicator was only available for 2004. The explanatory power of the model in regression 6 is the same as in regression 5 with an R^2 of 38%. Once again we lose a number of observations due to data limitations.

In regression 6 the HIV prevalence variable is not statistically significant as a determinant of HAART coverage, whereas it was for 2009 data. However, the coefficient has a p-value of 0.136 which is only marginally outside of the 10% level of statistical significance which tells us that the scale of the epidemic in each country was an important determinant of HAART coverage for countries even in 2006. Government health expenditure is statistically significant in the 2006 model at the 1% level, whereas it was not significant in all of our regressions using 2009 data. There are two possible reasons for this. The first is that as we noted before only 2007 health expenditure data was available for inclusion in the 2009 HAART data model, which may have created a mismatch in our analysis in terms of when those funds were spent (2007), and the outcome variable (2009 HAART coverage).⁴⁵The second reason may be to do with the fact that while there was a significant increase in external funding for HIV/AIDS in the period during and just after the '3-by-5' initiative, there is some evidence that domestic governments often matched external funding received with domestic expenditure on HIV/AIDS during this period as well (Lief & Izazola-Licea, 2006). In a review of HIV/AIDS financing in 13 developing countries, the authors found that "in all 13 countries, international HIV/AIDS assistance has increased, and all 13 have simultaneously increased their own domestic HIV/AIDS public spending" over the period 2001 to 2005

⁴⁵Even then, the variable coefficient has a p-value of 0.116 which is marginally beyond the 10% level of significance so domestic government health expenditure still has some 'non-negligible' effect on HAART coverage outcomes in our model,

(ibid, p. 1).⁴⁶ Indeed all 13 countries received increased international aid for HIV/AIDS over this period, but they did not reduce their own levels of public spending on HIV/AIDS or other government programmes (ibid, p. 4). This evidence suggests that domestic governments did not only rely on external funding assistance to increase treatment provision, but committed their own resources as well which explains why the health expenditure variable is significant in the 2006 model.

Our three political institution measures are not statistically significant in the 2006 model, whereas the decentralization variable was significant in the 2009 model. Our state capacity index is statistically significant at the 5% level which affirms our finding that countries with high levels of state capacity are better enabled to achieve higher levels of HAART coverage. In regression 6, the regime-type variable has a small, negative coefficient. The ambiguity of the results we have found using this variable is possibly because of the evidence we presented in this Chapter that authoritarian regimes can perform well in terms of providing access to HAART even though coverage was slightly higher in democracies. Therefore, because the Polity IV indicator accounts explicitly for both authoritarian and democratic characteristics in a government, there is not a clear outcome as to which type of regime is most likely to result in better HAART coverage outcomes.

The cultural diversity variable coefficient has shown a negative directional effect throughout our analysis which is consistent with the arguments presented in Chapter 2 and 3. A possible explanation for why the variable is not statistically significant is that our sample countries are those that have already made the decision to establish a programme for providing treatment – which we did not consider before. In this way, these countries have overcome the challenges associated with political fractionalization such as stigma and shame of association which typically result in political leaders not wanting to openly address HIV/AIDS or not openly acknowledging the risk that HIV/AIDS poses to society as a whole. We argued earlier that from a pragmatic point of view political commitment in terms of HAART can be demonstrated by governments simply making the decision to initiate a rollout and committing scarce state resources towards implementation. Therefore, for our sample the effect of fractionalization on decision-making and implementation for HAART programmes is not as significant an issue because these countries have essentially already demonstrated their political commitment. Over the course of the '3-by-5' initiative many countries responded to the international consensus built up through such initiatives and the global impetus to provide universal access to treatment as a strategy to combat HIV/AIDS.⁴⁷ The availability of international funding and support would have certainly made it easier for domestic governments to initiate or expand HAART programmes. The countries in our sample are therefore countries that in 2006 were making decisions as to how to use increased international donor funding

⁴⁶ The 13 countries included are: Botswana, Burkina Faso, Chile, El Salvador, India, Indonesia, Kenya, Romania, South Africa, Tanzania, Thailand, and Vietnam

⁴⁷ See Schwartländer (et al, 2006) for a brief review of how the consensus about providing universal access to treatment has developed through successive editions of the International AIDS Conference over the ten years from the 1996 Vancouver Conference

and domestic resources to expand access to treatment and not decisions about whether to issue a treatment rollout in the first place. Arguably, initiating a new large-scale rollout programme can be a more imposing task for governments than expanding on an existing programme where distribution systems, bureaucratic procedures and a national strategic framework have already been established. The fact that the government health expenditure variable is significant for the 2006 model supports this view.

The government centralization indicator consistently shows that HAART coverage policy outcomes are better in countries with unitary or centralized governments where decision-making authority and strategic planning of a rollout programme are concentrated within central government. In regression 6, the coefficient of the centralization variable is positive and only just falls beyond the 10% level of significance (p-value of 0.131). The consistent effect that we see with this variable suggests that the 'Three Ones' principles in which there is a central authority (most likely the ministry of health) that coordinates strategic planning and systems for monitoring and evaluation are most likely to result in higher HAART coverage outcomes. The fact that many decentralized governments at least in Africa are formed for political reasons (e.g. to resolve ethnic conflicts, the effects of civil war, or political instability) means that success in terms of coordinated and effective service delivery is likely to be constrained in these countries. This effect may be even stronger in countries with high levels of politically salient ethnic and cultural fractionalization as politicians from different groupings find themselves fighting for power and control over resources – "highly fractionalized societies face higher levels of competitive rent-seeking among competing groups, resulting in higher transaction costs to reach agreement on public goods like health service, education, and infrastructure" (Cho, 2007:2).

In all, the comparison of 2006 and 2009 data shows three effects:

1. Domestic health funding and higher levels of state capacity were the most important factors in explaining the variations in 2006 HAART coverage
2. In 2006 and 2009, regime-type and cultural fractionalization have less of an effect on HAART policy than we expected due to intervening factors such as the availability of international assistance and domestic health expenditure in 2006
3. International donor funding is important but is not the most critical determinant of HAART coverage when we control for domestic state capacity for 2006 and 2009 data.

7. CONCLUSION

We set out to answer two questions related to the determinants of cross-country HAART coverage. The first of these asks how political institutions function to enable better HAART coverage outcomes and the second asks whether countries with higher levels of state capacity tend to have higher levels of HAART coverage. Throughout the paper we argue that an analysis of the determinants of HAART coverage should focus on factors that have a strong influence on how domestic governments go about making critical decisions regarding HAART rollout programmes, and how they are able to implement those decisions. To frame our approach to these research questions we focused our analysis along two main dimensions, namely a political institution dimension and a state capacity dimension.

On the first dimension we introduced three political institution variables that we believe impact on government decision-making and implementation, namely political regime, cultural fractionalization, and government centralization.

In terms of political regime-type, we expected to find that while there are examples of authoritarian countries that have achieved high levels of HAART coverage, it was more likely that higher levels of coverage will be achieved in democracies. Our findings in this regard were ambiguous at best. The political regime variable did not have a significant impact on our model, both for 2006 and 2009 HAART coverage. On the other hand, we found weak evidence in our data that both democracies and authoritarian regimes are able to achieve high levels of HAART coverage, although average HAART coverage was marginally higher in democracies. Our discussions throughout the paper lead us to the conclusion that democratic governments are effective at providing treatment to those who need it and the potential shortfalls of democratic systems such as weak political opposition or drawn out bureaucratic processes are not as significant as we might have thought. We also think that the autonomy that authoritarian governments have to make policy decisions positively affects their ability to provide treatment such that HAART coverage levels in these countries are certainly comparable to those in democracies. Finally, we find that controlling for other factors, specifically the level of economic development and state capacity, particularly in countries with a high HIV prevalence, reduces the salience of political factors such as the type of regime as institutional determinants of HAART coverage.

Regarding cultural fractionalization, we expected to find that the levels of HAART coverage would be lower in countries where ethnic and cultural differences were institutionalized or politically salient. Indeed, although our variable was not particularly strong in our model, there is an indication that high levels of fractionalization have a negative effect on the levels of HAART coverage in our sample of countries for 2006 and 2009. We therefore concur with the views in the literature that politically salient boundary institutions within a society affect the perceptions of the threat that HIV/AIDS poses; confound decision-making processes because of different groupings competing for power and scarce

state resources; and can lead to government inaction on providing treatment due to a combination of stigma and shame of (group) association with the disease. However, we note that the increasing number of governments that have followed the international consensus by committing state resources to facilitate rollout programmes suggests that political considerations such as cultural fractionalization have a lessened effect on the levels of HAART coverage than we might have expected.

In relation to government centralization, we expected to find that the levels of HAART coverage are likely to be higher in countries with centralized governance institutions, particularly in resource-constrained settings. We found convincing evidence that while decentralizing the decision-making and implementation of HAART programmes could have benefits in terms of flexible and localized strategies, unitary or centralized governments achieve higher levels of HAART coverage. From our discussions it seems that centralized governments are in a better position to exercise strategic oversight, coordinate decision-making and planning, and monitor progress over national rollout programmes than non-unitary governments.

On the second dimension we introduced two measures of endogenous state capacity from the literature that we believe impact government decision-making and implementation in terms of providing treatment, namely tax revenue as a share of GDP, and our own state capacity index. State capacity is broadly defined as the ability of government to implement policy. On a pragmatic level, we argue that providing HAART is a highly resource-intensive process that encompasses not only funding, but also the infrastructural, institutional, and human resource capacity to ensure effectiveness in implementation. Therefore, in relation to both of our measures for state capacity we expected to find that countries with higher levels of state capacity generally achieve higher levels of HAART coverage.

Regarding the tax revenue indicator, we found evidence that countries with higher levels of tax revenue collection as a proxy for state capacity, achieve higher levels of HAART coverage. This is a result of three effects: firstly, tax revenue provides a greater pool of budgetary resources to actually finance government expenditure on policy programmes including providing HAART; secondly, tax revenue is an indirect measure of state autonomy, and the despotic power of government to extract resources from society with which to achieve its objectives; and thirdly, as an outcome of an actual state policy, tax revenue collection is reflective of the institutional and infrastructural ability of government to implement policy in general. However, we note that the strength of the tax revenue variable as a determinant of HAART coverage in our model is potentially affected by an ambiguous relationship that exists between tax revenue collection and regime-type.

We developed our own index of state capacity using Principal Component Factor Analysis (PCFA). The index is a broad, composite measure incorporating measures of infrastructural, bureaucratic, and health care sector capacity to arrive at a single country score for state capacity. Applying this index to our analysis has yielded encouraging results in terms of our research question. The index is a significant determinant of HAART coverage for both 2006 and 2009. In this regard, countries with higher levels of state capacity as measured by the index are most likely to achieve higher levels of HAART coverage. We therefore confirm our view that domestic endogenous state capacity is a critical determinant of HAART policy outcomes, and is a broader concept than simple measures of health sector capacity.

In general, our findings suggest a few areas for further research. A weakness in our study is that we do not pursue empirical evidence on the inter-relationships that exist between our political institution factors. For instance, it may be that the inclusive nature of democracy places democratic governments in a better position to limit the negative effect that ethnic and cultural fractionalization has on HAART outcomes. Another possibility is that centralizing decision-making authority, budgetary resources, and planning within central government has the effect of limiting the adverse effects of fractionalization by allowing a central authority to ensure that resources for providing treatment are equitably distributed regardless of social grouping. In our view, each of these is an important consideration and could serve as the basis for future analysis. Another avenue for further research is to apply the state capacity index to analyses of other AIDS policy outcomes related to prevention strategies, and to assess how the determinants of prevention strategy outcomes might be the same or different from those for treatment strategies across countries.

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